THE IRON AGE

New York, May 21, 1925

ESTABLISHED 1855

VOL. 115, No. 21

Shoemaking for 5,000,000 Horses

Keeps a Dozen Plants Busy—Gives Employment to 175,000 Blacksmiths—Requires About 100,000 Tons of Iron and Steel Annually

BY PRENTICE WINCHELL

THEY said the old gray mare was ready for an epitaph; that in a few years the only specimens of Equus Caballus would be stuffed in museums. But it isn't true, after all. As Mark Twain remarked when shown the newspaper report of his demise, the statement was a bit exaggerated.

When the American Steel & Wire Co. announced in February that the manufacture of horseshoes was to be abandoned at the Shoenberger Works in Pittsburgh, newspaper paragraphers seized the occasion to mourn the passing of the good old days when Dobbin drew the shay. They intimated that the horseshoe business was headed for that limbo which long since swallowed the spinning-wheel, the pewter mug and the stage coach. They wept metaphorical tears over the grave of the village blacksmith.

But it isn't true, after all! There are still five million horses which need shoes in the United States. A dozen plants still make horseshoes and horseshoe bars. And if the spreading chestnut tree no longer casts its shade upon the rustic smithy, still—there are thousands of larger shops each of which can shoe more mares this week than the sinewy arms could compass in a month.

The horseshoe business has been in existence some 2500 years and it is not likely to disappear overnight. Times have changed considerably since the Greeks made leather socks for their steeds and the Romans nailed horseshoes above their doors to keep away the plague, but the making and selling of equine footwear is still a thriving business. Even today, when the Chinese use silken sandals to protect the feet of the Mandarin's horse and cattle hide shoes are in vogue in Asia, the volume of business done by the manufacturers of iron and steel shoes is very respectable.

The advent of the automobile has affected the horse, naturally. That famous pair of spanking blacks has given way to the smart speedster—and few there are who would care to return to the barouche or the carryall. The driving horse is a thing of the past: today our equine population consists chiefly of draft horses, with a few racing thoroughbreds, hunters and polo ponies still upholding the prestige of the "gentleman's horse." But the draft horse has ever been the mainstay of the horseshoe maker and stout Clydesdales and powerful Percherons still carry a fair share of the white man's burden.

Most of the losses suffered by the equine ranks in the retreat from the motor have taken place in the larger towns and cities, however. It is estimated that the number of horses and mules, used for other than farm purposes, declined from about 3,000,000 in 1910 to approximately 2,000,000 in 1920. There has probably been a slight decrease since that time, but it has not been so rapid as that which took place during the war, when feed was high, labor scarce and motor trucks new.

The horse has held his own very well on the farm against the invasion of tractor and touring car. There are today some 17,000,000 mules and horses engaged in agricultural work. No great proportion of these are shod, however. On the typical Iowa or Illinois farm, for example, not more than one pair out of every four pair of horses is likely to be shod—and then for a few months in winter. More shoeing is done in the northeastern States on account of the rocky nature of the ground, but the bulk of the horseshoe business comes from the draft and general purpose horses plus about 500,000 saddle horses, which require careful shoeing.

Practically all of the horseshoes used in this country are machine made. In Europe the local blacksmith still forges most of the shoes from bar iron, although American machine-made shoes are being exported in larger quantities each year. The farrier has lost most of his importance, even on the Continent, for today he forms but an insignificant portion of the iron industry. Time was when the craftsman in iron, able to make swords and armor and shoes, ranked next to the King's

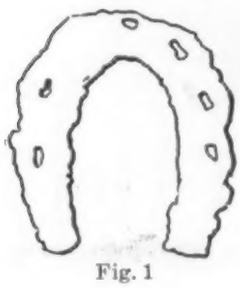


Fig. 1

Fig. 2

Fig. 3

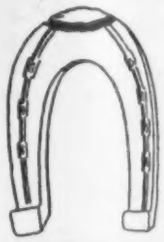


Fig. 4

BEFORE HORSESHOES WERE MACHINE-MADE

(1) *Probably made by the Celts prior to the Roman invasion of England. Found with Roman coins of the first century.* (2) *Light-weight iron shoe of the second century found in Moorish farrier's tent after the battle of Isly.* (3) *Thin iron shoe found in France, with a bronze coin of Faustina, A. D.* 175. (4) *Age uncertain, but probably the third or fourth century. Remarkable in its resemblance to the modern horseshoe. Notice the toe-calk*

—Courtesy Phoenix Horseshoe Co.

chamberlain and was given the rank of "mareschal." There are tales of royal attempts at forging silver shoes and lavish honors showered upon the successful smiths who enabled an army to march to victory on shoes of wrought iron.

But with the invention of a machine capable of turning out shoes by the thousand, the prestige of the farrier began to wane. Individual skill in the design of shoes was discounted. And today the maker of steel guns and shells, of armor plate and battleships holds the confidence of nations which once belonged to the blacksmith.

The manufacture of shoes by machinery in the United States dates from about the year 1861. There were companies which made horseshoes in quantity long before this—the original plant of the Phoenix Horse Shoe Co. was built in Hartford, Conn., in 1800. But until the Burden Iron Co. of Troy, N. Y., procured letters patent on a machine for the manufacture of horseshoes and contracted in 1861 to supply the Federal government with large quantities during the Civil War, there had been no actual machine production. Production by machine was started in England about the same time, but acceptance of the new shoes did not come so fast on the other side of the Atlantic. As late as 1873 William Douglas wrote that "A strong objection exists among farriers to put on machine-made shoes, but at the same time I feel confident that these shoes must ere long come into general use." By this time there were half a dozen plants making horseshoes in the United States and blacksmiths accepted the new idea very readily.

It was still necessary for the blacksmith to know his trade thoroughly, for the preparation of the hoof, the treatment of peculiarities in the horse's foot and the need for good judgment as to the particular type or weight of shoe required left plenty of room for the exercise of individual skill. These workers in iron generally did all sorts of odd jobs, such as making and repairing wagon tires and repairing machinery and consequently were, even with machine-made shoes, persons of considerable importance in the community.

Then came the automobile. Little by little, roadsters and touring cars drove driving horses from the high roads and struggled for supremacy in the field of heavy transportation. The old custom shoeing shops here and there put up new signs bearing the words "Service Station" or "Automobile Repairs." Others, unable to find enough business, went the way of all flesh.

Some idea of the change which has been wrought in this regard may be gathered from the fact that fifteen years ago there were some 232,000 blacksmiths plying their trade in the United States: five years ago the number had dwindled to 195,000 and today there are probably not more than 175,000. But the decline seems to have stopped. Probably the figure will be much the same ten years from today.

The new type of blacksmith shop handles considerable automobile business in addition to its regular line of work. In the large cities many companies which employ thirty horses or more (such as those engaged in contracting, baking, milk distribution, express service and the like) have their own shops. In the rural districts the old order is with us yet. There the blacksmith does manage to make a living at his trade of farrier, though he may take on a little repair work to help out.

Machine-made shoes were for some time manufactured only from wrought iron, muck bars being the raw material. But since the steel horseshoe was developed some years ago, it has increased rapidly in favor until today about 60 per cent of all shoes sold in this country are steel and 40 per cent iron. Number 1 railroad wrought scrap is the material ordinarily selected for

Fig. 5

Fig. 6

Fig. 7

(5) *Thought to be a pathological shoe made to protect an injured foot. Found in the ruins of a Gallo-Roman habitation in France.* (6) *A Japanese sandal made of rice straw for horses and bullocks. Made of silk or cotton for horses of the grandees.* (7) *The modern horseshoe is made in dozens of standard sizes and in weights ranging from five ounces for racing to as heavy as two pounds for heavy work*

—Courtesy Phoenix Horseshoe Co.

first-grade horseshoes. The use of steel shoes has grown more rapidly in the South than in the North. They cannot be broken so easily in the fitting as the iron shoes, and since many of the mechanics in the South are negroes with little skill in metal working, they are greatly favored there. The Northern smiths still prefer the iron shoes in many cases.

In the search for the most suitable material for horseshoe manufacture, the farrier has had recourse at various periods to such widely different materials as leather, horn, vulcanite, papier-mache, rope, rubber, bronze and straw. But iron and steel still hold supremacy, though some of the other materials, notably rubber and rope, are used occasionally in connection with iron or steel in the construction of special shoes for protection against slipping on wet or icy pavements.

The advantages of machine-made shoes are uniformity of weight and material, while the only possible disadvantage lies in rigidity of design, which—considering the dozens of designs available—does not constitute much of a disadvantage. Styles in footwear for our four footed beasts of burden have not changed so rapidly as those which are displayed in store windows for milady's use. Aside from the introduction of the adjustable calks and the use of rubber and leather pads, which began about 1901, hoofware is much the same as it was fifty years ago.

Nor have there been any fundamental changes in manufacturing methods, with the possible exception of the development of some new dieing processes. In view of the fact that demand can hardly be expected to increase from now on, it does not seem likely that improvements in manufacturing methods would be worth while, so long as they would involve scrapping of equipment thoroughly adequate for the time being.

The prospectus issued prior to the formation of a horseshoe company in the eighties states that: "It appears by the census of 1860 that the daily consumption of horseshoe iron for this purpose is 397 tons, 354 tons of which were hand-made and 43 tons machine-made." Assuming that this census was based on a 300-day working year, the consumption at that time must have been in the neighborhood of 120,000 tons a year.

The census lists the value of horseshoes produced in that year at about $100,000—thirty years later it had reached $1,000,000. By 1910, rolling mills and individual plants manufacturing horseshoes were turning out some 2,000,000 100-lb. kegs a year. Just before the war the industry's product was valued at nearly $9,000,000. Great quantities of shoes were shipped overseas during the conflict and by the close of the war the total output had climbed to a $12,000,000 annual valuation. By 1921 the output had dropped materially, however, and the valuation declined to about $8,000,000.

—Courtesy Phoenix Horseshoe Co.

One of the Steps in the Manufacture of Horseshoes

For the last five years production has shown no great change one way or the other. It is variously estimated that total output now runs from 1,350,000 to 1,500,000 100-lb. kegs. It requires approximately a ton of iron or steel to make 1600 lb. of finished product, so that the current consumption of iron or steel for this purpose is close to 100,000 tons a year.

The product of the dozen companies now engaged in the manufacture of shoes is marketed through the heavy hardware jobbers, who in turn sell to the blacksmiths. While the sale of shoes dropped off materially in the 1910-1920 period (about one-third), it has remained fairly steady since that time. The horseshoe industry is apparently settling down to a long period of stabilized demand. Unless there is a sudden and unexpected shortage of gasoline, or a nation-wide epidemic of horseshoe pitching, there seems to be no material change in prospect for several years to come.

Philadelphia Foundrymen Hear Talk About Westinghouse Foundry

Howard Evans, secretary Philadelphia Foundrymen's Association, proved himself to be a good publicity man when he drew forth, Tuesday evening, May 12, the largest crowd that has attended one of the association's meetings in many months. Mr. Evans' publicity stunt was to announce an airplane trip to the Essington plant of the Westinghouse Electric & Mfg. Co. at South Philadelphia. The airplane trip was by pictures and not by actual propulsion through the ambient ether.

William Kuebler, chief chemist of the Westinghouse foundry, showed the pictures and gave a running description of the many features of the foundry. He was preceded by another Westinghouse man, R. H. Wright, who showed pictures by stereopticon of some of the steel mill drives which have recently been installed by his company. Views showing installations at the plant of the Phoenix Iron Co., Phoenixville, Pa., were featured and there were also pictures of the new, large motors which have been built for the Homestead works of the Carnegie Steel Co. and the mills of the Wisconsin Steel Co., Milwaukee.

The usual dinner preceded the meeting and the attendance, both at the dinner and at the meeting, was large. Plans are being made by the Philadelphia foundrymen to go to the annual convention of the American Foundrymen's Association at Syracuse, N. Y., in October in special cars, and reservations are now being made for this trip by Secretary Evans.

POWER OPERATED CHUCK

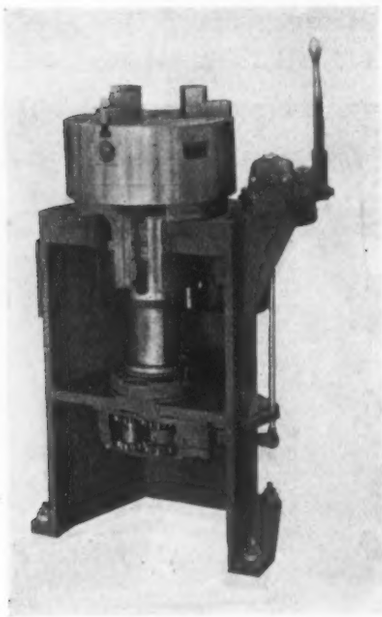
Simplicity of Design and Operation Features Intended to Reduce Idle Time

On chucked work the time required to chuck the piece in either standard chucks or fixtures is not directly productive and any decrease in this idle time means, of course, an increase in the time available for directly productive machining operations. On single-spindle machine tools, chucking time is a definite factor in the process, no matter what portion of the productive time it comprises. In the case of multiple-spindle machines, where loading is done simultaneously with machining, this factor becomes important only when the rate of machining crowds the operator beyond his capacity to chuck.

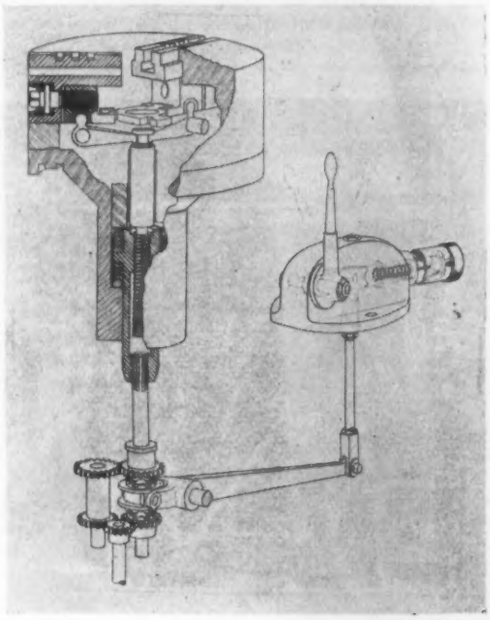
As a step in the reduction of time out for chucking, and therefore increasing machine output, power chucks of various designs have come into use. One of the more recent of such chucks is that developed by the Bullard Machine Tool Co., Bridgeport, and applied to various models of that company's machine tools. In developing this chuck, several requirements were kept in view. It was aimed to provide for only a simple motion by the operator. It was considered essential that its action be positive and dependable, while its mechanism should remain simple and of ample strength. Insofar as possible, its complete function should be self-contained with power derived from the same source as the machining function, rather than dependent upon accessory or external power, which may be subject to fluctuation and interruption separate from the primary machine operation. It was also thought that the power chuck should permit of definite control of the gripping power exerted on the work; for proper chucking requires simply the holding of a piece against the pressure of the cut, and both accuracy and efficiency of the job may be as adversely affected by over-chucking as by insufficient support against the cutting operation.

The primary actuating motion of the mechanism of the Bullard power chuck, the arrangement of which may be noted from the accompanying illustrations, is a vertical pull exerted by a screw and nut. This motion transferred to the three jaws of a standard chuck by bell crank lever may also be adapted to the operation of special fixtures designed to be used with it. When the pressure is set by power it cannot be released except by reversing the motion. Its operation is controlled by a double clutch with angular teeth and compound gears which provide power in either direction from a common source. The driven member of the clutch is brought in contact with either forward or reverse drive by connection with a hand lever operating through dart and spring tension so calibrated as to actually measure the load of pressure on the jaws. The chuck as shown has been applied to the company's four-spindle and six-spindle Contin-U-Matics for the operation for both standard chucks and special fixtures and is an essential feature of the new Vert-Au-Matic, recently described in these columns. It is also incorporated in Mult-Au-Matic design as a special feature, furnished only when specified for machines under construction, not having been developed as yet for application to machines already in use.

The chuck is operated by throwing the engagement lever for either forward or reverse movement. It is disengaged automatically when the movement has been accomplished, and it is claimed that it is impossible to build up an excessive jaw pressure by holding the clutch lever in the engaged position. The time required for operating the chuck is 2 sec.



A Vertical Screw, Nut and Three Bell Crank Levers Serve to Clamp Work in This Power-Operated Chuck. Excessive jaw pressure or loose clamping of work are avoided, it is claimed



Warehouse Prices of Cold Rolled Strips Cut $11 Per Ton

Edgar T. Ward's Sons Co., which recently announced an abandonment of quantity differentials on cold-finished steel bars from warehouse, under date of May 11, has announced an average reduction in the warehouse base prices of cold-rolled strips of $11 a ton in Cleveland, Detroit and Chicago, and at the same time has revised the quantity differentials, cutting them materially on lots of 500 lb. or more, but raising them on lots of less than 500 lb. The new base prices are 6.20c. per lb., Cleveland, 6.30c., Detroit, and 6.35c., Chicago. The former quantity differentials called for a charge of 25c. per 100 lb. for lots of 2000 lb. or more; 40c. for lots of 1000 to 1999 lb.; 55c. for lots of 500 to 999 lb., 75c. for 100 to 499 lb. and $1.50 for lots of less than 100 lb. The new schedule calls for the base price for lots of 2000 lb. or more 15c. per 100 lb., for lots of 1000 to 1999 lb., 30c. for lots of 500 to 999 lb., $1 for lots of 300 to 499 lb., $2 for lots of 100 to 299 lb. and of $3 for lots of less than 100 lb. It will be observed that in the larger lots, the quantity differential is reduced $5 per ton, but it is given a stiff boost in the case of the smaller lots. It is explained that the old small lot quantity extra was too small and necessitated a higher extra on the larger lots than otherwise would have been necessary. The change is made to relieve the larger buyer from carrying the burden of expense entailed in the small lot sales.

Distribution Forges to the Front

Scientific Management Diverting Attention from Production to Merchandising—Psychology and Personnel Discussed at Taylor Society Meeting

AMERICAN industry, having concentrated on production, finds itself today with too much capacity. The time is at hand to utilize those scientific methods, which have been so successful in the manufacturing department, to work out the problems of distribution, elimination of waste, management of clerical forces and other divisions of business which heretofore have been neglected. This was the trend of thought voiced at the spring meeting of the Taylor Society, held under the auspices of the University of Michigan at the Michigan Union, Ann Arbor, Mich., May 14 to 16. The registration exceeded 200 and the discussion was spirited throughout all of the sessions.

During the past five years there have been 9,500,000 buyers of new automobiles, said James H. Collins, merchandising director Chilton Class Journal Co., Philadelphia, in discussing "Tendencies Affecting Methods of Management in the Automobile Industry." This rate of growth, in his opinion, cannot continue. In 1923 the output of motor car plants was better than 90 per cent of capacity. The heavy demand of that year, however, stimulated further expansion, with the result that productive capacity is now in advance of consumption.

Costs of Production and of Distribution

For the past four or five years automobile makers have devoted their attention to getting production costs down to a "dead rock" basis. During the next five years they will concentrate on reducing the cost of distribution. That automobile manufacturers are already taking steps in this direction was indicated in remarks by H. M. Jewett, president Paige-Detroit Motor Car Co., Detroit. He told how auditing companies have conducted thorough investigations of the business of dealers and have developed systems of accounting to suit the needs of distributors of all classes, from the largest to the smallest. Standards of costs have been developed for all departments of the dealer's business on the basis of the experience of distributors throughout the country. This has resulted in the introduction of sound business methods where they did not exist before and has been conducive to more intelligent selling.

Will the automobile industry maintain its position? Mr. Jewett's answer is emphatically, yes. When the motor car was first put on the market it was mistakenly called a pleasure car. The crying need of the country, with its magnificent distances, was transportation. The advent of the automobile supplied that want. Quantity production with progressive assembly and other economical methods of manufacture made it possible to supply cars at prices within the reach of all. Today the automobile is an economic necessity.

The American automobile industry controls the motor car business of the world. The enormous home consumption has put American manufacturers beyond reach of foreign competition. Exports are growing; those for the first half of this year will be double the total of any entire year previous.

That there is an engineering and a scientific approach to the problem of distribution was the burden of comment by the president of the Taylor Society, Percy S. Brown, Corona Typewriter Co., Inc., Groton, N. Y. It is imperative that executives of American industries ascertain what can be done to bring the brains of production management to bear upon the scientific solution of the distribution problem. Proper distribution is not synonymous with over-intensive merchandising. In fact, excessive stimulation of sales often has the bad effect of encouraging plant expansion beyond the actual needs of the country. Distribution should be studied dispassionately and scientifically, to the end that the manufacturer may have at his command all essential facts regarding the market for his products.

Elimination of Many Kinds of Waste

That bankers and investors already are taking keen interest in industrial management in its broadest interpretation was brought out in a paper by H. I. Shepherd, vice-president Guardian Trust Co., Cleveland. It is only from a full recognition of the fundamental principles of business and their application to the case at hand that the credit of banks can be intelligently extended or supervised, he said. The laws of business operation are as stable and immutable as those of any other line of activity. There is not one view of business for the manufacturer, another for the engineer and another for the investor and banker. Net profit is the magnet that directs the interest of all. Any condition, whether imposed by capital, by labor or by bad laws, that makes profits impossible is unsound, whether caused by waste of material, of energy or of time.

The difference between business methods of the last ten years and of the coming ten years is going to be measured largely by the elimination of waste. This means not only the elimination of waste of time, or the waste that comes from obsolete or inadequate machinery, but the waste that comes from failure to utilize by-products. The second outstanding feature of the next ten years of manufacturing operation is the absorption of the surplus of buildings and equipment left since the war, and which today confronts our manufacturers in the form of non-productive burden. The problem of today is not one of expansion, but of economy—economy of overhead, economy against waste and that economy which comes from a rapid turnover of capital—the speeding up of machinery, the efficient use of labor. There must yet be added to all good management the ability to create a spirit of cooperation in the accomplishment of the thing at hand. The inability of America to produce in proportion to its capacity to consume has led to a constant demand and an attendant profit that has made attention to the small details in operation unnecessary, but those days are past.

In extemperaneous remarks, Mr. Shepherd described how banks engage experts in organization and management to examine their clients from the point of view of their soundness as operating enterprises. Conventional balance sheets and income-expense statements are no longer regarded as adequate basis for judgment concerning new loans or the continuance of old loans.

Automobile Model Changes Decried

The product of the automobile industry has been changing and is still changing and, until a stage of relative stability is reached, no satisfactory or dependable analysis of the business can be made. This opinion was voiced by O. E. Hunt, chief engineer Chevrolet Motor Co., Detroit, in discussing the addresses of Messrs. Collins and Jewett. The same point was brought out in a session devoted to a consideration of the automobile distribution problem in relation to frequency of change of model.

It has long been the practice in America to stimulate sales by changing styles, said T. J. Litle, Jr., chief, engineering department, Lincoln Division, Ford Motor Co., Dearborn, Mich., in reading a paper entitled "Frequency in Change of Model." In his opinion, the policy of changing automobile models every 12 months is a bad one. Frequently last minute changes are made in new models, with the result that the en-

gineering and tool department must work day and night. As a result, the plant often must be shut down for new tooling, entailing the loss of good mechanics. The aftermath is to be found in heavy losses to dealers in unsold cars of previous models and in a flood of complaints from buyers of the new models. This means that service men must be sent to all parts of the country and that structural defects found must be immediately corrected in the factory.

Frequent changes in models prevent the perfection of production methods. In Mr. Litle's opinion, no really good automobile can be produced in less than three years. Moreover, frequent model changes place a heavy burden upon the dealer, by forcing him to carry a tremendous stock of parts, and are unfair to the owners of previous models, because they unduly depreciate their investments. Minor changes in a car should not be made simply for the sake of the change. There is nothing to be gained by increasing the diameter of a cylinder a fraction of an inch to bring about a slight increase in power. There is no justification in small changes in shackle bolts, for example. Improvements, so far as possible, should be made to fit the old car. The body may be beautified and changed in its lines and still fit an old chassis. Such a policy will enable a service station to increase its business greatly, by enabling automobile owners to bring their cars up to date.

In commenting on Mr. Litle's paper, H. H. Rice, assistant to the president General Motors Corporation, Detroit, asserted that the great advance in the automobile industry is directly due to the fact that the engineers have developed so many improvements that owners of old cars became dissatisfied and bought new ones. The replacement of the old with the new is not necessarily an economic loss. He cited an example of one of the General Motors Corporation's shops replacing a bank of gear cutters with new machines of greatly increased capacity. He agreed with Mr. Litle, however, that no changes in models should be made without good logical reasons.

Economic Waste

Stimulation of demand by changes in models was discussed in relation to the used car problem by Prof. C. E. Griffin, University of Michigan. He voiced the opinion that the saturation point in production is drawing nearer, despite the fact that the replacement demand for cars has increased. In 1917, 17 per cent of the production of automobiles was offset by the number scrapped. Last year it was 48 per cent. The replacement rate has a direct relation to the life of cars. The average life of an automobile is not dependent merely upon mechanical considerations. Cars are discarded because they are out of style and the number of cars dumped into the used car market is increased proportionately with the frequency of the changes in models. This policy is economically wasteful and socially bad, he said.

On this point Mr. Rice remarked that there is no economic loss when cars merely change ownership and are not actually scrapped. In replying, Prof. Griffin pointed out that the depreciation in the value of old cars through model changes brings the car owner closer to the point where the cost of repairs is greater than what he can recover, either through a sale in the used car market or to the scrap dealer.

E. J. Poag, Buick Motor Co., Flint, Mich., called attention to the fact that certain car manufacturers have successfully followed Mr. Litle's policy, but that others find it necessary to follow a radically different plan. Up to 1915 both the Buick and Ford companies increased their business at the rate of approximately 60 per cent a year. From 1916 to 1924 the progression was at the reduced rate of 12 per cent a year. A still slower rate of increase is expected in the next few years. The battleground in the automobile industry is among the moderate priced cars, which account for 23 per cent of the sales. Competition is so keen that manufacturers resort to every possible method of maintaining sales. Mr. Poag estimates that, in 1927, there will be only 20 manufacturers left, producing 97 per cent of the automobile output. It is because automobile manufacturers wish to be among the 20 survivors that they find it necessary to pay so much attention to model changes.

Yearly models are frequently yearly muddles, said John Younger, editor *Automotive Abstracts*, in commenting on the subject. The public has adopted the habit of judging cars by certain standards. A standard car implies that the manufacturer has had time to develop standardization in its construction.

In closing the discussion, Mr. Litle said that he was not arguing against real improvements, but he did claim that, through the custom of bringing out new models annually, manufacturers have artifically stimulated depreciation. Furthermore, the yearly model holds back sales because it makes buyers afraid to buy a model in its first year. As to the hypothetical 20 survivors in 1927, he said that he was trying to figure out a profit for those companies. One reason automobile manufacturers have been dropping out of the race is because frequent changes in models have eaten up their profits. Some producers have actually increased the volume of output and decreased their profits. It is possible for a car manufacturer to produce an automobile cheaper in the second year that in the first and cheaper in the third than the second. Decreased costs enable him to lower prices and thereby to stimulate sales.

"Should Automobile Manufacturers Make Their Own Accessories?" was the subject of a paper by J. H. Marks, purchasing agent Packard Motor Car Co., Detroit. The answer, in his opinion, is dictated entirely by competition. The determining consideration is whether it is more economical to make or to buy the accessories. In discussing Mr. Marks' paper, F. C. Shafer, Pemberthy Injector Co., Detroit, contended that manufacturers specializing in accessories which vitally affect the mechanical part of an automobile are able to produce them more economically than the automobile maker himself.

Need for Capable Office Management

Office management is a field which is just commencing to command the attention it deserves, according to a paper read by W. H. Leffingwell, president Leffingwell-Ream Co., New York. In 1880 there were 172,000 office workers. Today there are 3,000,000, although the population of the country is only a little more than double what it was in 1880. Out of every ten wage earners today, one is a clerical worker. This rapid growth is particularly dangerous, because of the general apathy of business men toward clerical work. A large, inefficient group has come into existence which is steadily eating up the profits of business. The 3,000,000 clerks earn $12,000,000 a day or an average of $4. The average efficiency in the office is only 50 per cent. If, by application of the same methods which have proved successful in the factory, one-half of the loss can be recovered, it would mean a saving of $3,000,000 a day in salaries alone. Mr. Leffingwell described in detail a system for classifying office work and standardizing operations.

In discussing Mr. Leffingwell's paper, F. B. Hammond, secretary of the American Association of Office Managers, pointed out that the office manager is handicapped by lack of knowledge as to how to handle his position. It is essential that he exercise care, particularly because he frequently must encounter antagonism on the part of managers of departments whose clerical forces he controls.

F. L. Rowland, Lincoln National Life Insurance Co., Fort Wayne, Ind., said that the time is not yet ripe to transplant the present state of factory management to the office field. In the factory, machinery and materials are the main factors. The machine sets the pace. This is not true in the office. Operations are largely mental or mental-mechanical and psychological factors are exceedingly important. The greatest progress in office management has been where office appliances are used largely. He who attempts to apply principles of scientific management beyond that particular field gets into a maze of variables. He recommended that, for the time being, no attempt be made to ascertain the cost of each particular office operation. He recommended, however, a plan tried in his own company, under which the operating costs of each

office department are measured against the outputs.

C. F. Yoakum, professor of personnel management, University of Michigan, described the office as the digestive organ of business. The place to begin in analyzing the office problem, he said, is with the person who does the original work. From there the study should extend up through the office, to see what steps really facilitate the original worker in the performance of his task. Frequently some steps can be left out. This is particularly true when an executive fails to make full use of his assistants.

Psychology and the Personnel Problem

"Experimental Psychology in Personnel Problems" was the subject of a paper by Professor Yoakum. He said, in part:

"The continuous struggle with spoiled work, absenteeism, turnover, unemployment, wages, etc., are in the forefront of things we seem always to have with us. My contention is that, with a better appreciation of the human factor, these, together with accidents, selection, promotion and the understanding of each other, are open to solution. This better appreciation necessarily results in recording an entirely different series of data than is now customary. It also involves an agreed willingness to experiment."

Attention was called to the fact that, in 1781, Kant excluded psychology and chemistry from natural sciences because they did not permit the employment of mathematics. Chemistry has long since taken its place among the natural sciences. It is therefore reasonable to look forward to the time when the problems of selecting, working with and influencing men are no longer merely intuitive arts but are skilfully done, because of successfully combined art and science. We are slowly beginning to realize that triviality and importance of events are not measured by one absolute magnitude of the events, but by the more specific relationships they bear to our appreciation of them.

He referred to the characteristics of the "learning curve"—its early steepness, its flatter portion, and the later steep portion where skill becomes expertness. An increase in wages at the plateau stage, theoretically at least, is more likely to fixate the sensations of fatigue, or habits of lack of attention, and to stimulate toward an elimination or shortening of the plateau. The wage phase of the incentive (for the worker in this stage) should be applied to those in the department who are most skilled. The beginners who are in the plateau stage should then be furnished with data showing how profitable it is to reach high skill. Thus the wage paid to others, not the direct wage, is the incentive.

Wages and Incentives

Incentives frequently have no direct bearing on wages. In one instance the management found that its product was losing in consumer demand. It laid off one-half its force. Production remained the same or better. Again it laid off men. Still the production failed to fall. This illustration seriously modifies the learning curve, if production be the measure, said Professor Yoakum. The change in the curve is not produced by task or bonus, or premium, or piece rate, or any other method of payment.

The theoretical learning curve must be built with those persons and those incentives which operate continuously at their highest efficiency. At the opposite extreme is that learning curve which is made up from an average of observed practices influenced in usual but analyzable ways. Between these somewhere lies that standard practice curve. The average and standard curves are variables conditioned by various factors present in differing degrees in a given plant or department. Without a deeper insight into the meaning of the learning curve than we have at present, it is impossible to reach standards of capacity for a position, for cost of training, for cost of turnover, for methods of training and for efficiency of supervision.

Observations by Professor Yoakum led him to conclude that at least four important elements cause the shifting of individuals from one occupation to another. They are (1) adolescent restlessness, (2) differences in individual capacity, (3) social status, (4) individual interests. The greatest turnover occurs during the period just after leaving school. In a certain company the turnover in individuals from 16 to 20 years of age is about 400 per cent; among those above that age the turnover drops to 40 per cent and below. However, 75 per cent of the employees remain with the company less than five years. This fact alone might simply mean that the age factor is the essential feature, but a follow-up among those who are older shows that relatively few, some 15 per cent of these, will be found in the same employ three or four years later. Continuity of service is not present. This raises the thought that much of our painstaking mathematics of wage payments is wasted effort.

A general psychological and sociological investigation of the reasons for any particular task obtaining a definite social status is imperative. It is also important to attempt to distinguish between an employee's real interests and those dependent upon temporary circumstance. Within the college group of engineers there are many who are more closely related to the salesmen in their interests than they are to practising engineers. From 60 to 65 per cent of the graduates of the larger engineering colleges are in occupations other than engineering five years after graduation.

An increase of our knowledge concerning human capacity will demonstrate, more forcibly than argument, the importance of allowing employees to know the lines of promotion available and the character of jobs which are open to each individual worker. Much of the effort we have expended in wage payment plans, said Professor Yoakum, is of no avail because of the non-observance of scientific caution. Attempts to solve the questions by cost-accounting methods without the collection of all pertinent statistics are direct wastes that go into overhead.

Technical Program for Steel Treaters Spring Sectional Meeting

Nine technical papers are scheduled for the various sessions of the spring sectional meeting of the American Society for Steel Treating at Schenectady, May 28 and 29. They are as follows:

"Some New Developments in Stainless Steel," by P. A. E. Armstrong, vice-president Ludlum Steel Co.

"The Relation of Crystal Orientation to Magnetic Properties of Silicon Steel," by W. E. Ruder, metallurgist research laboratory, General Electric Co.

"Case Carburizing," by B. F. Shepherd, metallurgist Ingersoll-Rand Co., Easton, Pa.

"Results of Examination of Metals with the X-ray," by Col. T. C. Dickson, commanding officer, Watertown Arsenal.

"Manufacture of Guns by the Cold Working Process," by Dr. F. C. Langenberg, director of laboratories, Watertown Arsenal.

"The High Points in the Manufacture and Working of Steel," by L. F. Johnson, United Alloy Steel Corporation, Canton, Ohio.

"On the Nature of Austenite and Martensite," by E. C. Bain, metallurgist Union Carbide & Carbon Co., Long Island City, N. Y.

"Manufacture and Heat Treatment of Large Forgings," by A. O. Schaefer, Midvale Co., Nicetown, Philadelphia.

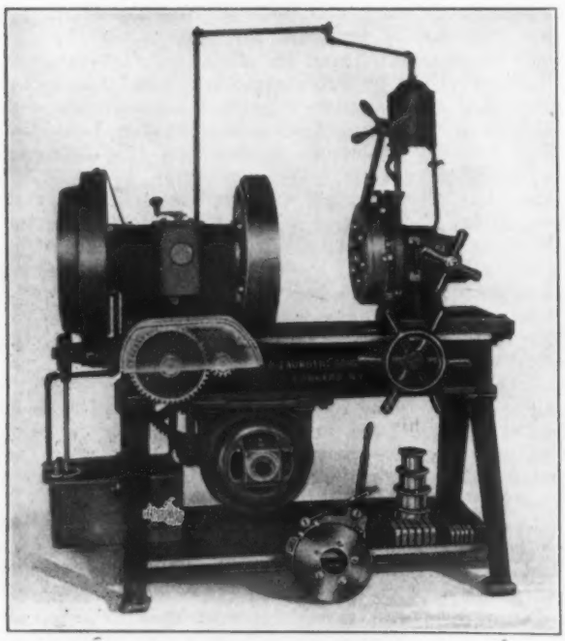
"Determination of Heat Treatment Costs and Furnace Efficiencies," by C. L. Ipsen, industrial heating department, General Electric Co.

The sessions will be held at the Hotel Van Curler. At the banquet, Friday evening, May 28, an address of welcome will be delivered by William Dalton, president of the Schenectady Chamber of Commerce, with a response by W. S. Bidle, president of the A. S. S. T. Addresses will also be delivered by Dr. W. R. Whitney, director research laboratory, General Electric Co., and R. B. McColl, manager American Locomotive Works. A visit of inspection at the Ludlum Steel Co., Watervliet, N. Y., is scheduled for the afternoon of the first day and a similar trip through the plants of the General Electric Co. and the American Locomotive Co. the following day, with an automobile trip to Lake George on Decoration Day, Saturday, May 30.

Improved Pipe Threading and Cutting Machine

Compactness is a feature of the motor-driven pipe threading and cutting machine illustrated, which has been placed on the market by D. Saunders' Sons, Inc., Yonkers, N. Y. The machine is designated as the 4-B and its capacity is for pipe from ⅛ to 4 in. inclusive.

The machine is driven by a 3-hp. constant-speed induction motor mounted underneath the bed, as shown, with a drum-type controller for forward and reverse speeds. The motor is geared directly to the driving shaft of the machine and speed changes are obtained by means of change gears. The cutting-off head is arranged with a tool slide and self-centering V-jaws



Pipe Threading and Cutting Machine with Capacity for ⅛ to 4 In. Inclusive

to steady the pipe during the cutting-off operation. The carriage with cutting-off head and die-head is moved by means of rack and pinion. It is arranged with the die-head at the front, sliding in ways, which permits of bringing the die-head close to the gripping chuck. When pipe has been threaded the die-head may be moved to one side, providing ample room for the pipe to pass through the cutting head without passing through the die-head. This is stressed as eliminating injury to the chasers.

The gripping chuck for holding the pipe is of standard universal type. A two-jawed self-centering chuck for centering the pipe is located at the rear of the spindle. An oil pump is provided for supplying a constant flow of oil to the chasers and cutting-off tool.

The machine is equipped with two adjustable expanding die-heads with interchangeable chasers. One die-head threads from ⅛ to 2 in. and the other from 2½ to 4 in., inclusive, right-hand. These die-heads are of the company's new type, that for the larger diameters being operated by worm movement, and that for the smaller diameters by lever and toggle joint movement. The floor space occupied by the machine is 2 ft. 2 in. x 4 ft. 8½ in. The weight of the machine complete is 1850 lb.

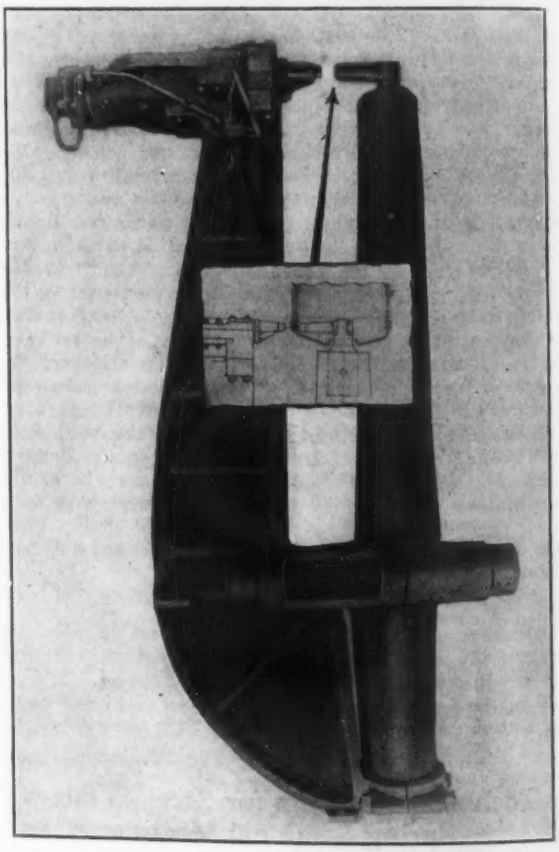
In the course of an address recently before the Chamber of Commerce of Beaver Falls, Pa., A. E. Adams, of Youngstown, president of the First National Bank and a director of the Youngstown Sheet & Tube Co., stated the company's freight bill last year amounted to $30,000,000. Mr. Adams spoke on the benefits which would accrue to manufacturing plants through construction of the proposed Lake Erie-Ohio River canal, principally in the way of securing lower freight rates.

Large Riveter for Boiler and Still Fabrication

What is thought to be the largest hydraulic riveter of its class is the 200-ton machine here illustrated, which was built by the Southwark Foundry & Machine Co., Philadelphia, for the Casey Hedges Co., Chattanooga, Tenn. The machine is especially adapted for use in the fabrication of high pressure superheat steam boilers and for the high pressure stills used in the manufacture of crude oil by-products.

The maximum pressure exerted on the rivet is 200 tons and the minimum pressure is 42 tons. Pressures of 65, 112, 135 and 177 tons are also available, variation in pressure being obtained by means of a six-power valve arrangement.

The riveter stake, which carries the 200-ton cylinder, is of cast steel. The cylinder is attached to the stake casting by means of four 3-in. bolts, which are located near the front of the riveter cylinder, so as to take care of the vertical stresses at that point. The die stake is a forging of special steel calculated to give the minimum deflection under full load and is 40 in. in diameter at the bottom of the gap. The reach of the machine is 18 ft. 8 in. measured from the center of the die to the bottom of the gap. The forged steel stake is bolted securely to the cast steel stake



Hydraulic Riveter With Forged Steel Stake and Designed to Exert Pressure of 200 Tons. The diagram shows the use of the special horn in riveting boiler heads through a central manhole

by means of two steel bolts 13½ in. in diameter. The top of the forged steel stake is provided with a horn of special alloy steel, which will make it possible to drive rivets through a manhole in the boiler head, as shown in the small diagram in the illustration. The stroke of the riveting die is 12 in. The weight of the raw material entering the machine totals 230,000 lb.

The Austin Co., engineer and builder, Cleveland, has moved its New York office to larger quarters in the Equitable Building, 120 Broadway. J. K. Gannett is the New York district manager and A. D. Engle and D. C. Raymond are his assistants.

FOUNDRY CONVENTION

Technical Program for Syracuse Meeting in October

Fourteen technical sessions have been planned for the 1925 meeting of the American Foundrymen's Association at Syracuse, Oct. 5 to 9. The program committee has arranged the meetings so that those who plan to stay only a couple of days can choose a time when technical sessions in which they are most interested are grouped. Because of the extent of interest in the cast iron field, a general session on this subject will also be held the first day of the convention to provide a discussion session for those who cannot be present during the latter part of the week. The schedule of the meetings is as follows:

Oct. 5, afternoon sessions: 1. Joint opening session, non-ferrous metals; 2. gray iron foundry practice.

Oct. 6, morning sessions: 3. Steel foundry practice; 4. aluminum alloys; luncheon round table discussion, 5. brass foundry topics; afternoon session: 6. apprentice training; 7. refractories.

Oct. 7, morning sessions: 8. Steel foundry metallurgy; 9. general committee reports; afternoon sessions: 10. business session; 11. sand control and research.

Oct. 8, morning sessions: 12. Malleable cast iron; 13. metallurgy of cast iron; afternoon session: 14. sand control.

Oct. 9, morning session: 15. Gray iron foundry practice.

The report of the work of the foundry sand investigation committee will be of interest to all foundrymen, for new developments will be discussed. Since the Milwaukee meeting many of the largest foundries of the country have undertaken sand control testing and the benefits to be derived from such work will be discussed from a practical standpoint. Two new committees of the sand research committee will have preliminary reports to make.

On Tuesday, Oct. 6, a luncheon will be held for those interested in brass foundry shop problems. After the luncheon an informal discussion on practical shop problems will be held. This meeting is especially for shop foremen and each will be given a chance to contribute to the discussions. No report of the discussions will be kept, as it is desired to have all feel especially free to express their views.

Engineering Foundation Ten Years Old

Marking the close of the tenth year of the Engineering Foundation, which was established through a gift of $500,000 by Ambrose Swasey of Cleveland, supplemented by other contributions, notably a bequest of $50,000 under the will of Henry R. Towne, a dinner was given in honor of Mr. Swasey on May 14 at the Union League Club, New York. Edward Dean Adams, vice-chairman of the foundation, presided. He presented to Mr. Swasey an engrossed expression of appreciation for his gifts, and to Charles F. Rand a bound copy of a resolution adopted in commemoration of Mr. Rand's five years of service as chairman of the foundation. Among the speakers was J. V. W. Reynders, president of the American Institute of Mining and Metallurgical Engineers.

Brass and Aluminum Casting Discussed

Approximately 100 attended the May meeting of the New England Foundrymen's Association on Wednesday evening, May 13, at the Exchange Club, Boston. The association for the first time in its history devoted the evening to the operation of brass and aluminum foundries. R. F. Harrington, Hunt-Spiller Mfg. Corporation, Boston, president of the association, presided, while C. F. Lundbom, general foundry superintendent Walworth Mfg. Co., took charge of the discussion.

F. H. Cole, metallurgist Walworth Mfg. Co., Boston, gave an excellent and more or less technical history of the making of brass. In the discussion that followed there was considerable variance in ideas on gating and other phases of foundry practice. Edward J. Rogers, C. E. Rogers Brass Foundry, Boston, then gave a brief history of aluminum from the ore to the pig, as well as some fundamental points on the melting and pouring of aluminum castings. E. B. Estabrook, Leeds-Northrup Co., Philadelphia, gave a short talk on pyrometric control in the melting and casting of non-ferrous and ferrous metals, his talk being illustrated by lantern photographs.

The June meeting of the association will be turned over to a representative of one of the large automobile manufacturers in the Middle West, who will discuss production costs.

Stove Manufacturers Plan Larger Organization

Meeting in New York last week at the Hotel Astor, the National Association of Stove Manufacturers worked out a plan of reorganization by which a new group will be formed, using 10 sectional associations as a nucleus. Changes were suggested by the committee in charge which will affect the character of service rendered the industry. The new name will be inclusive. National Association of Manufacturers of Heating and Cooking Appliances was the name suggested.

At the opening session on May 13, S. V. Dunckel, cost accountant, Chicago, pointed to omissions in cost systems, attributing the present low profits in the industry to this evil. Generally, he said, trade discounts and allowances run to 7 or 8 per cent of business done and this eats away profits without appearing on the books in many cases.

H. T. Ely, of the division of simplified practice, Department of Commerce, Washington, showed what has been done in standardization in various industries, recommending some active effort in this direction by those present. To this end a committee prepared plans for simplification in the stove industry and suggested the adoption of standard types and parts. However, in the opinion of Allen W. Williams, secretary of the association, the movement will not get under way until the amalgamation of the several section groups has been perfected.

COMING MEETINGS

May

American Management Association. Production Executives' Division. May 21 and 22, Chicago. W. J. Donald, 20 Vesey Street, New York, managing director.

American Iron and Steel Institute. May 22 General meeting, New York. E. A. S. Clarke, 40 Rector Street, New York, secretary.

National Association of Purchasing Agents. May 25 to 28. Tenth International convention of the Informashow, Milwaukee Auditorium. Walter H. Wenzel, general chairman.

American Society for Steel Treating. May 28, 29 and 30. Spring sectional meeting, Hotel Van Curler, Schenectady, N. Y. W. H. Eisenman, 4600 Prospect Avenue, Cleveland, secretary.

June

American Society for Testing Materials. June 22 to 26. Annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. C. L. Warwick, 1315 Spruce Street, Philadelphia, secretary-treasurer.

National Foreign Trade Council. June 24 to 26. National Convention, Olympic Hotel, Seattle. O. K. Davis, India House, Hanover Square, New York, secretary.

New Plant Rolling Charcoal Iron

Continuous Mill of the Reading Iron Co. for Bars and Skelp for Boiler Tubes—Knobbling Process Used

At the close of the war the Reading Iron Co., Reading, Pa., was operating a large forge shop in one of its buildings. Because of radically changed conditions in that industry in the years immediately following the war, the company decided to convert this forge department into a modern charcoal iron plant. The reconstruction was commenced early in 1923 and the new plant is now in operation.

In general, the knobbling fire process is used, the resultant blooms of iron being manipulated with hammers and then put through a bar and skelp mill. Some years ago the company operated a small charcoal department in what was then known as the "sheet mill." The new department is, however, much larger, having an estimated capacity of about 100 tons of charcoal iron boiler skelp in 24 hr.

A feature of the plant are the charcoal fires in which are produced the blooms from the mixture of scrap and charcoal. There are 20 of these fires arranged back to back. One of them is shown in an illustration. First the charcoal and then the scrap is charged into these furnaces and, as the melting proceeds, further additions of scrap and charcoal are made until there is formed at the bottom of the hearth a lump of iron about 300 lb. in weight.

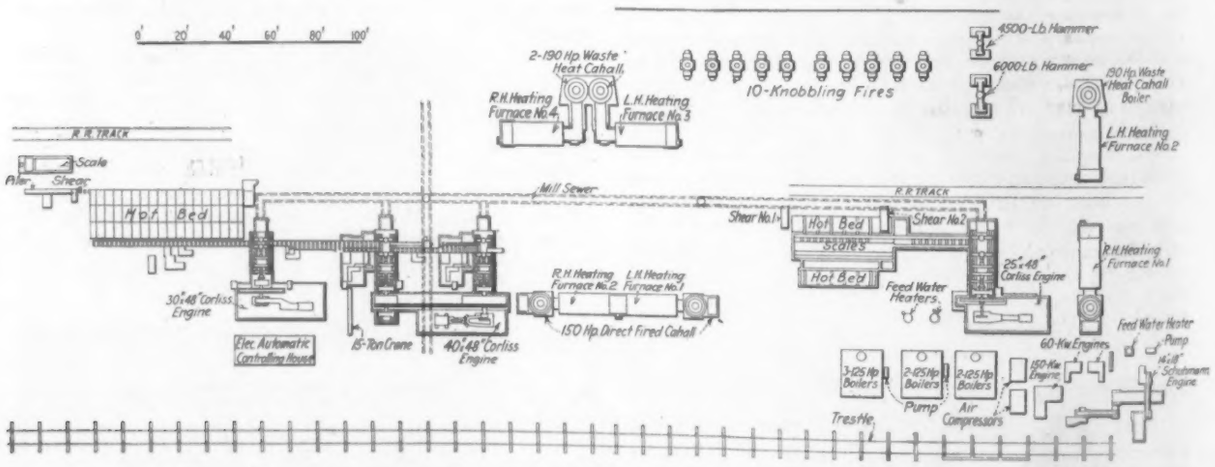
The Reading Iron Co. made its own designs for these furnaces. Air is blown into the fire on each side under a pressure of about 2 lb. from a Root blower in the power house. About 14 charges every 8 hr. is the average for each fire and they are operated on double turn. The manipulation of the fire is by hand, two men, the forgeman and helper.

The principal raw materials for this metallurgical operation are charcoal and scrap. The scrap, which consists principally of bundled skeleton and stamped sheets, cotton ties, drop forge trimmings, charcoal boiler tube croppings and other suitable material, is located in a yard contiguous to the forge building and served by an overhead 10-ton crane having a span of 70 ft. This crane brings the scrap to the mixing platform at one side of the charcoal iron department. Here the charges are mixed as desired and placed in bins, where they are held in readiness for use in the charcoal fires. These charcoal bloomary fires are located in one end of the old forge building, which is 160 x 500 ft., as shown by one of the illustrations.

A new building was constructed of brick and steel, 50 x 75 ft., for storing the charcoal, which is received in box cars and unloaded by hand on to an elevating conveyor, which discharges the material on to a horizontal conveyor. In order to transport the charcoal to the bloomary fires a monorail system has been installed, equipped with bottom dumped buckets. By means of this system the charcoal is dumped into steel bins, conveniently located for each fire. The system was installed by the Robins Conveying Belt Co., New York.

The lumps of crude charcoal iron, sometimes called loupes, each about 300 lb., are conveyed by means of hand tongs and a monorail system to one of two 3-ton steam hammers, where they are forged into blooms about 6 in. square. These blooms are then weighed on a platform scale from which a jib crane transfers them to the heating furnaces.

The heating furnaces, of which there are two, are of the natural draft type and fired by coal. The blooms, after being brought to the right temperature in these heating furnaces, are conveyed by a monorail to a 23-in. bar mill, where they are rolled into bars of varying widths, the range being 4 to 8 in. The Reading Iron Co. designed and built this mill, which is driven by a 25 x 48-in. Allis-Chalmers engine.



General Arrangement of the New Charcoal Iron Plant of the Reading Iron Co.

Crude charcoal iron, now in the form of bars, is sheared to the desired lengths and then arranged in piles corresponding to the width of skelp which is to be produced. After being placed upon cars provided with racks, they are transported from the bar shear to the heating furnaces by a gasoline mule. Four heating furnaces serve the 18-in. mechanically operated skelp mill. Each furnace has three doors and is of the coal-burning type with natural draft. Piles of skelp, after being brought to the proper temperature, are transferred by tongs suspended from a monorail to the 18-in. skelp mill.

The skelp mill was designed and built by the Reading Iron Co., while all tables, the hot-bed and shears, were designed and furnished by the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa. The roughing mill, which consists of one stand of 3-high rolls with five passes on the average, is direct driven by a 40 x 48-in. Allis-Chalmers engine. Tilting tables, which are controlled electrically, serve the various passes. The piles are then conveyed by roller tables to the strand rolls, which are comprised in a single train of 3-high

The Hot Bed of the 23-In. Bar Mill. A monorail delivers the hot blooms to this mill

rolls with three to five passes. These rolls are operated by rope drive on the roughing stand engine through 21 single 2-in. ropes. The sag is provided for by mechanical couplings. The two sheaves, one for the drive and the other the driven sheave, are respectively 20 ft. and 10 ft. in diameter, so that the roughing rolls are driven at the rate of about 60 r.p.m., and the strand rolls at about 120 rev.

There is a tilting table, located on the catcher side of the strand rolls, which receives the various piles and raises them, placing them automatically in position for the next pass. The table synchronizes on the roughing side, with the tilting table on the catcher side, and this holds true for all passes with the exception of the last return pass, at which point the pile passes through a repeater into the bottom pass. From this point it is carried by roller tables to the finishing mill.

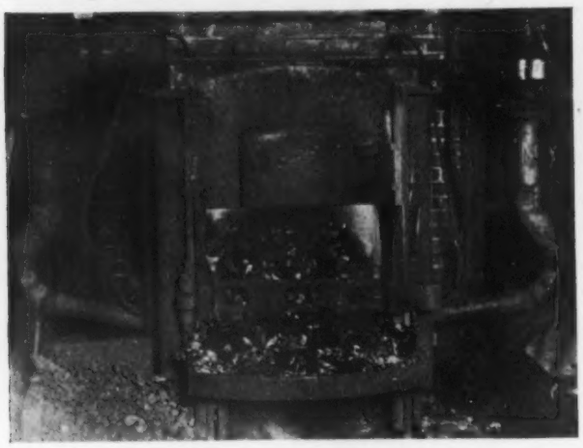
The last or finishing mill was designed and built by the Reading Iron Co. It is a single stand, 2-high train, driven by a 36 x 48-in. automatic cut-off engine. A roller table receives the skelp from this mill. This table has an electrically operated kick-off which pushes the skelp on to the hot bed. This bed, which is 20 x 70 ft., is equipped with fingers electrically operated, which push the skelp across the bed onto the inspection table, where it is turned over for inspection on the under side.

From this point the skelp, which slides down on to a roller table, is conveyed to a shear electrically operated, where it is cut to the desired length. A piling table receives it at this point, the elevation of which is electrically controlled to conform to the height of the shear blade. An automatic dial scale receives the material at this point, after which it is transferred to the tube works and manufactured by the company into charcoal iron boiler tubes. Another product of the mill

The Hot Bed and Shears for the Skelp Mill, Which Was Designed and Built by the Company

is iron pipe skelp, with a width varying from 6¼ to 13 in.

One of the interesting features of the plant is the provision made for using waste heat. The 10 pairs of bloomary furnaces are equipped with 10 Cahall waste heat boilers, and the various heating furnaces are also equipped with waste heat boilers, having a total of 680 hp. The steam from these boilers is used to drive the engines for the mills.



The Lower Part of One of the Knobbling Fires. Here the blooms of charcoal iron are taken out

Cleveland Punch & Shear Works Expand

The Cleveland Punch & Shear Works Co., Cleveland, has completed a plant extension program, including the addition of considerable new equipment, that will result in an increase of about 50 per cent in its capacity. In addition, the company has strengthened its organization by the appointment of Robert J. Pardee as vice-president and works manager and Arthur Schloz as press engineer. Both have been connected with the Toledo Machine & Tool Co., Toledo, Ohio, for about 15 years, Mr. Pardee as assistant to the president and Mr. Schloz as head designer. Mr. Schloz recently designed what is said to have been the largest single crank toggle press ever built, weighing when complete 450,000 lb. and having a capacity of 1500 tons. An important feature of this machine is the small number of bearings and joints required to operate the blank holder, thereby resulting in a saving of power and upkeep.

The Cleveland Punch & Shear Works Co. for 40 years has been engaged in designing and manufacturing punching and shearing machinery. Recently it added to its regular line the designing and manufacture of power presses for manufacturing stampings from sheet and bar stock and the addition of the press department has necessitated an enlargement of the manufacturing facilities. The company has sales offices in New York, Chicago, Philadelphia and Pittsburgh, and will shortly open a sales office in Detroit.

At the last meeting of the board of directors the following officers were elected: W. D. Sayle, president; W. C. Sayle, first vice-president and general manager; A. L. Bechtel, vice-president and chief engineer; R. J. Pardee, vice-president and works manager; H. C. Sayle, vice-president and metallurgist; A. C. Eckert, secretary and treasurer; H. J. Corrin, sales manager; W. J. Stewart, advertising manager.

Production of Portland cement in April is reported by the United States Geological Survey at 13,807,000 bbl., a large increase over the 11,726,000 bbl. in April, 1924, which itself was the highest April production ever recorded up to that time. Production for the four months to date makes a new high record at 41,952,000 bbl., compared with 39,472,000 bbl. in 1924.

Threadwell Tool Co. Purchases Wells Corporation

The Threadwell Tool Co., Greenfield, Mass., has purchased the plants, machinery and patents of the Wells Corporation, and will continue the manufacture of taps, dies, screw plates and small tools. The new company will centralize all of its manufacturing at Greenfield and will maintain sales office and stocks throughout the country.

The Wells Corporation was formed in 1923 and was a consolidation of several old and well known companies. Threading equipment and small tools of high quality, and in many cases of patented design, were manufactured. Early in 1924 the Wells Corporation became embarrassed and placed its affairs in the hands of a receiver.

The directors of the new company are the following: George Roberts, Winthrop & Stimpson, lawyers; Col. Francis L. Robbins, Jr., capitalist, New York; Lawrence M. Bainbridge, Bainbridge & Ryan, bankers, New York; Charles A. Ruberl, formerly of the National City Bank; Charles H. Keith, Otto Kolstad and W. S. Keith. Charles H. Keith is chairman of the board; Otto Kolstad, president, and W. S. Keith, treasurer.

Charles H. Keith is president of the New England Box Co., vice-president and director of the Franklin County Trust Co., secretary Rogers, Lunt & Bowlen Co., director Lamson & Goodnow Mfg. Co., and of the Boston Mutual Life Insurance Co. Mr. Kolstad is known in the hardware and plumbing trade and is treasurer of the C. F. Church Mfg. Co., Holyoke, Mass. W. S. Keith has been identified with the New England Box Co. as secretary and will devote his entire time to the Threadwell Tool Co.

The manufacturing organization which was responsible for the development of the Wells Corporation's products will remain unchanged. Louis E. Peck is manager and Herbert J. Smith, superintendent.

The new company will also continue the manufacture of cutlery. This department will be conducted under the name of "Nichols Brothers," a trade mark that has been associated with fine cutlery for more than 40 years. This department will continue under the supervision of A. B. Anderson.

Revises Line of General Purpose Motors

With the development of a new direct-current motor and a redesigned type of alternating-current motor, the General Electric Co., Schenectady, is manufacturing a completely revised line of "general-purpose" motors.

The redesigned alternating-current motors are for use on polyphase circuits and are made in two types, the squirrel cage and the wound rotor design. Standard power ratings range from 5 to 200 hp. The machine with the squirrel cage rotor is designated as the KT 500 and the wound rotor type as the MT 500. Both are of skeleton frame type and are available as horizontal and vertical machines. The improved bearing construction is the outstanding feature. The shafts and bearings are larger than in the previous design, the oil rings being larger also and the oil level lower, with a larger oil reservoir capacity. Spring oil well covers are provided and improved insulation in the small closed slot frames in the smaller machines is intended to make these motors suitable for operation where special atmospheric conditions are encountered. The bearing housings have also been redesigned.

To Make Garvin Chucks at New Britain

The Skinner Chuck Co., New Britain, Conn., which recently purchased patents and other rights to the chuck line manufactured by the Garvin Machine Co., New York, has provided for the manufacture of the Garvin line at its New Britain factory. The purchase means the addition of air-operated chucks as well as a line of valve chucks and revolving jaw chucks for manufacturing valves.

The Skinner Chuck Co. is also about to put on the market a new type of air-operated chuck.

Strains, Gases and Hair-Cracks

Iron and Steel Institute (Great Britain) Discusses Many Features of Steel Mill Practice

LONDON, ENGLAND, May 8.—Before proceeding with the business of the annual meeting of the Iron and Steel Institute, which opened in London yesterday, the President, Sir William Ellis, extended a cordial welcome to Dr. Benedicks, one of the honorary vice-presidents of the Institute, who had recently returned from a visit to the United States.

Sir Frederick Mills was inducted into the presidential chair by the retiring president, to whom a vote of thanks was passed by acclamation. Sir William Ellis stated that in the following week he would become president of the Institution of Civil Engineers and he expressed the hope that leading metallurgists and engineers would cooperate to a greater extent.

Presentation of the Bessemer Gold Medal

Sir Frederick Mills said that his first duty as president was to make the award of the Bessemer Gold Medal to Prof. Thomas Turner, in recognition of his distinguished services in the advancement of the science of metallurgy of iron and steel. For many years the recipient has been professor of metallurgy at Birmingham University, and head of a department which has become famous for its metallurgical researches, and prolific in publications dealing with many branches of ferrous and non-ferrous metallurgy.

In particular he might call to mind Professor Turner's early researches on the influence of silicon on the properties of cast iron, the results of which had met with immediate and wide application. His studies of the effect of each of the elements present in cast iron is said to have laid the foundation of scientific iron founding. That in itself was a great and worthy achievement, but Professor Turner had not rested there. His investigations included studies on the formation and varieties of graphite in cast iron, on the microstructure of castings, on the changes in volume during solidification, on the influence of the rate of cooling and of casting temperatures, not to mention the nature and properties of metals other than iron and steel, on which a vast amount of work had been expended, including the invention and design of a sclerometer for the purpose of testing their hardness.

Professor Turner, in acknowledging the presentation, said it was a great honor to receive the Bessemer Gold Medal of the Iron and Steel Institute. He was particularly pleased to be associated with the name of Sir Henry Bessemer. All people are more or less here worshipers, and Bessemer was certainly one of his heroes. Professor Turner was a visitor at the meeting of the Iron and Steel Institute in 1885 and was surprised to find that the members were engaged in discussing some work of his own on the influence of silicon on cast iron. Shortly afterward he was elected a member of the Institute. Later he drafted a paper and read it to the institute. Sir Henry Bessemer was present, listened with interest to it, and afterward shook hands with him and expressed his congratulations. He need not say that such an action on the part of so eminent a man was highly appreciated by the young researcher. There is much in a hand-shake; it often reveals the character of a man. He always remembered the shake of the hand that he received from Sir Henry Bessemer. There was a firmness and gentleness about it; there was the artistic feel which was associated with Sir Henry's remarkable artistic capacity and his craftsman's skill that left an impression upon his mind which would never fade.

Presidential Address

Adopting the precedent set by some of his immediate predecessors, Sir Frederick Mills devoted his address to certain aspects of the economics of the heavy iron and steel industry. It signified little to him that Great Britain now takes third or fourth place in her output; the real test applied being—"Is the British industry progressing, is it prosperous, and is it adequate to the needs of the nation and the Empire?" The position filled him with a certain amount of misgiving, and he proceeded to discuss what should be done in face of the two plain facts, which he set out as follows:

(1) The cost has, since pre-war days, increased some 50 to 60 per cent.

(2) Selling prices have increased by only 30 to 40 per cent; in consequence the scant margin of pre-war profit has disappeared and the industry has become unprofitable.

Absence of co-ordination is a matter that should be attended to without delay. The score of new blast furnaces projected and commenced during the war still remain unfinished, although a great deal of open-hearth and rolling mill plant was completed. Few British firms have now the funds available to complete their lay-out on the modern lines they intended and the president suggested that the Government should guarantee the provision of new, cheap capital to complete these extensions. He referred also to the severe competition which the iron and steel industries here have to face and he hinted at special legislation to remove unfair competition. But whatever governmental action be taken, he made it clear that, in his opinion, those who control the industry must be prepared to cooperate and to show that they know how the industry can be made efficient and adequate.

Coal and Labor Costs

He devoted the greater portion of his address to the question of coal and labor costs, which are now so high. Metallurgical coal has advanced 80 per cent in price since pre-war days. The "ultimate" labor in the cost of a ton of steel amounts to at least 92½ per cent and if to this is added the labor cost on stores, outside service, etc., the real labor cost is nearer 97½ per cent. The inference therefore is that if we are to improve our costs we must so order our affairs, both public and private, that we can get a better output for the labor now employed. Sir Frederick Mills did not complain of the average earnings of the workers but of the cost of labor per ton. If we can get more tons we can get them cheaper, we can sell more tons and therefore increase employment.

Sir Frederick pressed for more consideration of the question of the employment of large gas engines using coke-oven and blast-furnace gases—a process which is nearly universal in other European countries. There are plants in Great Britain where the coke ovens and blast furnaces are excellent and where the cost of conversion from coal to pig iron is second to none, but in those cases the benefit is lost in the subsequent processes.

He advocated an amalgamation of proprietors' interests and the segregation of orders and concentrating them into those areas and those works most suitable for their production, instead of, as at present, rolling a great variety of shapes in the same works, a practice which he characterized as wasteful. He suggested that the grouping of those plants which are geographically suited for the purpose would result in greater efficiency than is now possible.

Steel Direct from Ores

The president added that he had paid a visit to the Hagfo Works of the Uddeholms Aktiebolag in Sweden,

where mild steel is made in an electric arc furnace direct from iron ore. The ore so far used is concentrate, containing 65 to 70 per cent of iron, which is mixed with 22 per cent of fine coal and 10 per cent lime. 2500 kwhr. per ton is required for the whole process of reduction and refining. The resulting steel is quite fluid and of good quality. The process is admittedly in its experimental stage, the questions of speed and of economy remain to be demonstrated, but the company has dismantled one of its modern electric melting furnaces, and has decided to install in its place a new unit to test those questions. The president said he was impressed by what he saw, and if the figures of cost, both capital and manufacturing, given to him were confirmed by results, there would be a revolution in steel making which must have far reaching effects. He added a word of caution; 50 years ago Sir William Siemens made steel in an arc furnace; he also made steel from iron ore direct in a reverberatory furnace. Has Mr. Flodin at last justified Dr. Siemen's expectations?

Papers and Discussions

T. W. Hand, Sheffield, then read his paper, "Progress in British Rolling Mill Practice," a digest of which, with discussion, will appear in a later issue of THE IRON AGE.

Axel Hultgren, metallurgical engineer, Gothenburg, Sweden, read his paper on "'Flakes' or 'Hair-Cracks' in Chromium Steel, with a Discussion on 'Shattered Zones' and 'Transverse Fissures' in Rails," which elicited the following discussion:

Dr. W. H. Hatfield said that the question of snow-flakes—an American term—has been and is a serious question on the other side of the Atlantic and it is interesting now to know that it is a trouble in Sweden also. It has been to some extent a trouble in this country, but his own works has the matter completely under control, so much so that some years ago, when an incident of the kind came up, the director in charge of the particular works said: "If what we think is correct, we can make snow-flakes." That director reproduced the defects intentionally, and then said, "We will avoid the defects in the next cast," and did so. That demonstrated that in practice the difficulty can be overcome.

When the engineer or the manufacturer takes the billets to make crankshafts and articles of that kind, those articles have to be quenched and therefore cooled with extreme rapidity. If the steel is potentially capable of developing the cracks, and has to be nursed through the steel works, obviously those potential cracks will develop during heat treatment if they are there.

Reading the summarized deductions of previous investigators, it would be seen that almost every item of steel manufacture has been held responsible for the production of snow-flakes. It was said, to begin with, that it was the refining operations in the furnace; in the second place, that it was the casting temperature; again, it was the speed of rolling, the size of ingot, uphill cast or downhill cast, quick heating in the rolling mill, excessive draft in rolling. All those things have been given as the cause, but in his own works it was found that the difficulty is entirely eliminated by controlling the reactions in the furnace, the casting temperature, the speed of rolling in relation to the size of the ingot; and that the trouble is purely an ingot one.

The author said it had been found that such flakes, when present, invariably form during cooling after the final hot working operation, and that their formation is presented by retarded cooling. How could the author say that inside the billet or bloom cracks are not present previous to that operation? It was impossible to do so, for if he cut open the billet he had no opportunity of determining, unless he examined the ingots, which he had not done. There is no evidence, in the paper, of careful consideration of the metallurgical side before the rolling mill.

These Defects Are Latent

During the war, the trouble in America was very serious, and in going into the matter with a desire to help, most curious phenomena were discovered. A piece of steel could be sectioned and examined and found free from the defects, but when the steel was etched, those defects were developed. That brought another important aspect of the matter: The defects are not necessarily defects, but may develop into defects; in other words, they are not separations of surface. Sometimes they are so, but sometimes only planes of great internal stresses, where an acid attack developed that stress in such a way as to produce ruptured separation of surface. H. Brearley said he could not agree that all the defects shown as snow-flakes are due entirely to the ingot making process, but certainly a number of them are. The same type of defect can be formed during forging. The author was speaking mainly about steels containing about 1 per cent of carbon and 1½ per cent of chromium. The speaker had had association with ball-race making for ten years before he saw anything that bore the slightest resemblance to a snow-flake. For some years afterward he did not see another snow-flake, until the war-time, when all kinds of shifts had to be adopted to get the material required. One particular shift consisted in getting some iron workers to forge ball-race steel. Iron workers are accustomed to heating materials and when they got material like ball-race material they found snow-flakes in great masses.

He said that snow-flakes can be removed by heat treatment, if the mechanical continuity has not been broken down. In a really bad example heat treatment might not remove all the snow-flakes but it will remove a great number; but where continuity has broken down it is not to be expected the snow-flakes can be got rid of by heat treatment operations. If a crack is formed in a piece of cooled material during the cooling operation, one would naturally expect the crystal size of that fractured surface to correspond with the normal crystal structure of the mass of the material. The author's illustration of snow-flakes as something having a large crystalline appearance are not normal; they are not the normal size of crystals in the forged bar and, therefore, it is extremely unlikely that things of that kind can be produced by clinks in bars otherwise sound.

Disagreement About Terms

E. H. Saniter said that the word "flake" has been used in America for at least a half dozen different sorts of things that occur in steel. With particularly hard steels, what the author calls cooling cracks are clinks, and the author gave the cure. Mr. Brearley pointed out that the granular structure is much coarser in the clink than in the remainder of the bar. He took it, from the appearance of the fracture, that that is proof that it is a clink. The fractures appear to be those of hardening. Heating up after the hardening process produces a fine structure, but the clink is in the rolled bar and, therefore, the coarse grain is in that portion. That is proof that the portion is an absolute separation before the hardening operation takes place. In fact, structure has a great deal to do with many things.

Rate of Cooling Important

T. H. Turner said he was not clear that there were not two distinct phenomena. Appearances like some of those shown can be produced in any nickel-chrome steel by cooling quickly. Arc welding of a nickel-chrome steel or unexpected arcing, that occurs in some mechanisms, will produce cracks almost identical, which would be shown up by the method, an extremely good one, of using iron dust. The suspension is not necessary if the crack is smaller than can be seen with an ordinary magnifying glass. Often rubbing over with a penknife will show up the type of crack such as is left by rubbing over with fine emery.

Mr. Turner thought the phenomenon similar to a clink in the causes that produce it, and yet a clink is at right angles to that particular form of crack, or nearly at right angles. One question which arose was that, since all those steels are used in England in the hardened condition, how was the flake to be avoided by a slow, suitable rate of cooling and rehardening? He said that the type of fracture is a frequent source of fatigue crack.

He could not say that the defects did not start in the steel to begin with, but that is not the only way in which defects of the type are produced, and certainly in good nickel-chrome steels cracks may be produced by rapid cooling, such as occurs after arcing.

Dr. Hatfield said that, in works such as his own, the whole of the alloy steel must be cooled rapidly from an arcing temperature and therefore must be subjected to great internal stress, and if there is any weakness inside the steel the cracks will be developed. Therefore it is beside the mark to say that the steel should be cooled slowly in the way described. If a steel is not potentially sound in the ingot it is of no service to the more serious engineering industries.

H. H. Ashdown said that clinks occur in the cooling down process from forging and do not develop on subsequent heat treatment; he believed that was due to the refining that takes place in between. It is possible to take a forging showing clinks and refine it and quench it many times without the clinks developing. He said there is great risk of the trouble occurring, but when the cause is known it can be obviated entirely.

He thought it very largely due to the non-metallic inclosures. In many of the sections he had had the opportunity of examining, the trouble did not occur in the dendritic area but began at the cessation of the dendritic area. In a number of samples he examined he found clinks right in the area of inclusion and in some cases he found the inclusions lying right across the silver spots. During the war the trouble was very prevalent. He brought home some sections of inferior steel and one or two Americans said they showed what was called in America the "old snow-flake trouble." It was quite evident the author was trying to illustrate clink or snow-flake. Provided care is exercised in cooling down from the forging the trouble to a large extent will disappear. His firm often handles forgings of from 10 to 50 tons, with a length of from 10 to 80 ft. Such forgings cannot be buried in charcoal dust and means have to be devised to prevent rapid cooling from the forging condition; when that is done the troubles practically disappear.

Non-Metallic Inclusions

Dr. T. Swinden, Sheffield, had had considerable experience with some of the defects illustrated, and the fissures or cracks do not present a coarsely crystalline area, but are silver bright areas except where they occasionally go out toward the surface, when they are oxidized. The trouble is most pronounced in two types of steel, both made in the electric furnace, magnet steel, of the ordinary 6 per cent density type, and a steel containing about 1 per cent of carbon and 2 per cent of manganese. In the early days the defect was very pronounced and could be definitely traced to non-metallic inclusions, or at any rate these were found in the worst of the defects, and it was reasonable to ascribe the defect to them. When aluminum was cut out entirely in the finishing processes and titanium was used instead, a considerable improvement resulted, but the defect was not entirely removed.

From the type of the defect one assumed that the actual fissures arise after rolling or forging, from their shape, but it is most difficult to find any correlation in forging practice. Different forges were tried and different methods of heating and cooling, but none satisfactorily overcame the trouble. Although these defects are developed undoubtedly after forging or during forging and cooling down, he felt quite certain that the reason for them is to be found in the steel making process, from the fact that they are definitely overcome by modifying that work. The line of attack is to reduce the melting voltage and to reduce the casting speed. The work was done some three or four years ago but recent inquiries showed that the defect is never seen now in the billets from 10-in. ingots or 8-in. ingots, but occasionally it is seen in billets from 6-in. ingots. This proves definitely that casting speed, expressed in seconds per foot rise up the mold, is important.

W. T. Griffiths said that, since it is possible to quench a steel after a slow cooling treatment, such as the author suggested, the steel can stand a much greater stress. Is it possible that the weakness might develop during the slow cooling? Is it something that might come out of solution in the steel in the case of the slow cooled, which is kept in solution and does not exert its deleterious effect when it is quenched? At least one impurity in steel goes into solution at high temperatures and comes out on slow cooling—nitrides. They may not have anything to do with the particular trouble under discussion, but it may be the fact that, by not paying attention to proper casting and melting conditions, there is a chance of including in the steel some other impurity which might come out on slow cooling. If it comes out along the primary austenite grains there might be a heavy granular structure such as is found in the snow-flakes, and a certain weakness.

Author's Closure

Mr. Hultgren said the defect which he had dealt with in the paper is more varied in its occurrence than perhaps he had previously thought, and also more complicated in its formation than some of the contributors to the discussion had thought. He had tried to solve a certain definite practical problem, and he had the assurance of the manufacturers in such cases that that trouble was done with. It may be that what is called snow flakes, in the literature, in regard to nickel-chrome steels, in some cases is not identical with what he had described; at least it appeared so from the discussion.

The matter of flakes being present, and not being detected, is disposed of by repeated determinations by the magnetic method. The flakes he had described were not in his opinion areas of weakness; they were actual cracks, and they were seen under the microscope at high magnification, otherwise they could not be seen without any exaggerating effect such as by the method suggested. The particular type of crack described was first formed in the operation in cooling after hot working, because in no case could he detect any after retarded cooling.

Formed During Cooling

The next step in his conclusions is that, since they are formed during the cooling process, if the cooling rate is sufficiently fast, they must be a result of cooling stresses. If that is admitted, the main factor in the formation of such flakes must be the cooling stresses, and it is practically proved that slow cooling tends to avoid it. It would be dangerous, and it would not be of service, to put stress upon the ingot conditions in such a connection. If such cracks formed in the ingot they naturally would not look as such cracks do after that deformation; they would be elongated, and also, judging from the forging experiments when flakes were welded together, it was improbable that they would not be welded together during the successive stages of hot working.

It had been mentioned by Dr. Hatfield and others that in hardening one would expect similar defects to be formed, but that was not altogether quite clear. During cooling in air, when certain dimensions are at hand, there must be a peculiar distribution of stresses that will not prevail during cooling in water or in oil. The time of the stresses would be quite different, and the temperature at which the exterior and the interior portions will be subjected to the dangerous stresses will be different, and it is not clear that that phenomenon will occur, for that reason.

After Annealing and Hardening

What he had shown in regard to fractures comes always after annealing and hardening. Also, the temperatures involved are different in hardening and in hot working. In the case in question the temperature of hardening would be about 800 deg. C. (1470 deg. Fahr.). He believed Mr. Brearley was misled by the appearance of the flake, when he said that the flake surface indicated was too coarse, and did not represent ordinary forging practice. That can be easily explained. After passing the A_{r_1} transformation the grains are divided into a number of colonies. In breaking a forged bar, usually the fracture does not follow the boundaries, but goes through the grains. In the case in ques-

tion it did not follow the lines he had indicated, but the degree of coarseness of the structure will be determined probably by the number of pearlite grains within the network.

In the case of flakes, as a rule the crack follows the lines indicated; no doubt that would explain the difference. Also the temperature of formation is different, and is probably the cause of that difference in appearance. He believed the term "clinks" is preferred.

Strain in Mild Steel

Two papers, "Detection of Strain in Mild Steels," by T. Henry Turner and J. Dudley Jevons, and "Strain Detection in Mild Steel by Special Etching," by J. Dudley Jevons, were read and discussed.

Dr. Walter Rosenhain said the authors had shown a successful application of Fry's method of etching previously strained material and that the most interesting fact was that some steels will etch in that way and others will not, but unfortunately one cannot yet tell why. That is possibly a matter of greater interest than any other raised.

He understood the use of minimum distortion wedges to imply that distortion started from a point of maximum strain or maximum stress, where plastic deformation commenced, and spread along those lines which had been shown on the etching process. The width of the distortion region was seen gradually tailing off as it went away from the point where deformation began.

Mr. Turner said that what they had in view was that the distorted part of the metal actually advances across the specimen. The word "plane" does not accurately explain it; it really is a wedge of distortion which gradually moves across the specimen.

Dr. Rosenhain could not see how the fact that they had the six diagonal planes of the cube occurring in such strains could have anything to do with the fact that one had a body-centered lattice in iron. He thought it extremely likely that other metals having a different lattice have something similar, notably in tin. He thought all that happens as Mr. Turner suggested, is that they have a certain geometrical interest arising out of the formation of the test piece, which leads to geometrical configuration—one of the simple forms of symmetry which occurs in the body-centered lattice.

A Low Heat Necessary

Another interesting fact—although not of course new—is the circumstance that, to get those etching figures they had, first of all, to subject the straining material to a certain amount of heat somewhere about 200 deg. C. (392 deg. Fahr.). That is a striking fact because it is just that amount of heat which removes some of the most characteristic mechanical defects of plastic deformation. A piece of mild steel has a peculiar lack of elasticity, but if it is heated to 200 deg. C. for two minutes that lack of elasticity disappears and it appears as a hardened steel, having a reasonable elastic behavior. While the material is in that condition immediately following the strain, that etching process will not occur. Heating to 200 deg. C. causes recovery of elasticity and also brings about that property of etching. He would like to ask the authors if they had ever given the sample a period of prolonged rest at a given temperature, and whether they could say whether or not after that prolonged rest such etching would take place or not. It was really a matter of considerable interest.

Then, as possibly throwing some light on the question of the behavior of different materials, he pointed out that the time temperature required for bringing about the elastic recovery varies widely with the purity of the material, and it might be there is something of the same kind at work in determining whether or not those lines can be etched.

Samples Exhibited

J. P. E. C. Stromeyer, Manchester, exhibited a few samples, one of which was a piece of steel which he had picked up from the scrap heap; those samples had been etched according to the Fry system. To his mind they were rather good specimens in so far as the lines indicate a sort of pencil mark. They were not that sort of impressionist style, with broad bands across the specimens. One of the samples, in which a hole was punched in the center of the plate, showed those beautiful logarithmic lines crossing one another. The other specimens showed the lines produced by shearing of the edge of the plate and in that case the samples had not been heated in an oven; they had been ground on an emery wheel so as to get a smooth surface. He fancied they must have been heated to a considerable temperature and that temperature seemed to have produced the effect necessary with the Fry process.

Would it not be interesting to study the time of heating? One of the papers mentioned that all the samples had been heated for about half an hour. In the case he had in mind the samples had been heated for not more than a few minutes. In fact, the lines disappeared; at least they were very marked at the edge and disappeared further on, as if the plate had been more severely heated at the edge than all the rest of the plate, showing that a comparatively short exposure to high temperature thus produced the condition in which the Fry etching would show such lines. At any rate, the lines in all such cases were very fine. Then he tried another piece of steel, which had not been picked up from the scrap heap, and he could not get any lines at all, but he noticed some markings which evidently had nothing to do with the straining of the material, at least not a straining of the material as ordinarily understood, but the straining perhaps, that had occurred during the rolling process.

Those samples showed markings like a wood grain. He had traced one or two of those funny lines on the samples and had found them practically contours. If those lines were contours produced by planing the samples and cutting through a number of fine layers of metal parallel to the outside surface of the sample as rolled, naturally that outside surface was irregular and, therefore, the lines showed the depressions and risings of the surface.

Fluid Behavior

He suggested the possibility that some materials, including some steels, behave like ordinary fluids. If subjected to the shearing process during rolling, the pressure of the rolls produces a horizontal differential movement in the metal. If the metal is of the nature of a fluid that movement will be a uniform one; the shearing stress will be uniformly distributed. On the other hand, if the metal is of a semi-solid nature, one would expect a shear in which they had both friction of rest and friction of movement. If the material has that property of friction of rest and of movement, one would expect that with two surfaces like that, and the top one moving in one direction, instead of the shearing being a slanting line in another direction, it would be in steps. As soon as the material begins to move along a certain line it keeps on moving in that direction and the material above and below that line remains stationary. It would be a step-wise movement.

In some specimens, which would not show the Fry straining effect at all, he got those markings strongly; in others, not at all. He also tried it on round bars, his idea being that a round bar reduced by rolling, ought to give the same effect; but on grinding the surface of a bar of that sort, while expecting to find irregularity, he found absolutely no effect whatever in regard to the particular steel used. It certainly is a striking feature the way that peculiar pattern comes out in some steels, and he thought it a subject well worthy of the most careful study.

Radial Lines After Torsion

He had come across another curiosity. Fry mentioned that a sample which had been subjected to fatigue torsion stress showed radial lines. Apparently the same action which he had suggested in the previous case, that there was a sort of friction of rest and of movement, seemed to occur in that sample. The portions between the lines seemed to have remained unchanged, but the shearing effect had nevertheless been produced along those lines. Then he tried a sample

which was twisted (in one direction) and not fatigued and the results were somewhat like those he had indicated where four or five sausages appeared to have been tied together in a bundle, and when twisted one can see distinctly the lines of those sausages. He did not know whether the differences between his results and Fry's results were due to the material or to the fact that in Fry's case the stresses were fatigue stress and in his own case they were not.

He was much interested in finding a test which would show the amount of straining to which the material had been subjected. Fry's method apparently gives one means for showing this, but it does not apply to all steels. It occurred to him that there is a line of research which might prove extremely fruitful.

The ordinary etching process is based on taking pure water and adding some acid. Now pure water will not attack iron at all but, by adding a little acid, a fluid is obtained which shows up the grain of the material. There is a method for differentiating between the actual strained and unstrained structure of the material. On the other hand, concentrated acids, sulphuric acid and many others, will not attack the steel at all, whereas, if one adds a little water, they attack the iron. It seemed to him the Fry fluids have reached a point where the corrosive action takes place, but the corrosive action differs from the ordinary action in that it differentiates between the strained and the unstrained portions of the material. He tried to work out that idea by using various concentrated fluids and adding a little water. In his own case the water could be looked upon as the corrosive agent, but he could not say the results had been satisfactory. He thought, however, there was a good deal in the idea of trying to work from the top end of the scale, as against having to work from the bottom, as in the ordinary etching process.

There is an intermediate process, which he was afraid would not lead to satisfactory results. That is the use of reagents which will attack the material between them, for instance, chlorine gas and other gases and also sulphur dioxide. It is believed usually that sulphur dioxide will not attack iron, but if the iron is heated to 700 or 800 deg. C. (1300 to 1470 deg. Fahr.) it will attack it and very seriously. As a matter of fact, there were already a few instances in the case of boilers where fuel containing a large percentage of sulphur had attacked the boiler plates seriously. It seemed, therefore, they had three processes: (1) Using water with a little acid; (2) Using strong acid with a little water; and (3) Using an intermediate reagent like sulphur dioxide or chlorine, which will attack the material generally, and possibly by juggling with those things, as chemists can do, we might arrive at some test which will distinguish between the conditions.

Boiler Plates for High Pressures

Mr. Patchett, Wellington, Salop, said that manufacturers want to know some ready means of testing the steel when it is delivered. Things sometimes happen in connection with boiler plates that ought not to happen. He was responsible for some boilers working at 400 lb. pressure, and also one boiler working at 1200 lb. pressure. The drums in connection with those boilers working at a pressure of 400 lb. are 2 in. thick. Those joints on a longitudinal seam call for a 6-in. rivet, and that is the sort of thing they wanted to get away from. The boiler working at 1200 lb. pressure has no joint. The drum is 30 ft. long and 4 ft. in diameter, and it was forged from a steel ingot. It is about time we were able to get away from such heavy things.

Dr. W. H. Hatfield, Sheffield, referring to stresses in boiler plates, said the tests would be valuable as indicating to the boiler constructor the crudity often displayed in the production of boilers from steel. He had on occasions listened to subtle deductions based on micrographs at very high magnification, which evidence had been claimed as showing why boilers had burst. In his opinion, often the trouble with boilers is really of a simple kind. The distortion around the holes is of a serious kind, as minor defects and cracks are left in the neighborhood of those holes. Obviously, if a method such as suggested could be employed for the careful examination of the steel in the vicinity of the rivet holes, and in analogous directions, it would be of great value. One interesting feature brought out in the paper is that the maximum etching effect appears to be coincident with the critical amount of cold work which produces grain growth.

Amount of Oxygen and Hydrogen

Professor Desch, Sheffield, said that when Dr. Fry's original paper appeared, he had made many efforts to repeat his results, and had failed in every case. He had never succeeded in obtaining any of those lines. It would be interesting to know what was the real difference between Fry's steels and the steels which had been examined by the authors. When the series of steels was made up by the authors for testing their chemical composition, they gave an analysis showing the ordinary elements present, but they did not go on to the analysis of oxygen and hydrogen in the steels, and it is quite possible that the differences in that respect may have something to do with the remarkable differences between German and English boiler steels.

H. O'Neill, Manchester University, mentioned that Dr. Rosenhaim had suggested that ageing might affect the results. The specimens of metal which Mr. Stromeyer had recovered from the scrap heap had probably suffered some sort of ageing treatment. It appeared likely that they had been lying about for some time, and had perhaps partly recovered their elasticity.

Author's Closure

Mr. Turner said that he had tried a long period of rest—he did not think it made much difference. But what did make a difference was any heating which might have taken place, and it was just possible that the metals which Mr. Stromeyer had produced from the scrap heap were scraps of metal which had been superheated, and that might have given the results.

With regard to the question of time, the recent work had shown that 5 min. was enough. One sample he had done repeatedly by simply heating for 2 or 3 min. with the burner at one end, and it would still show the marks. With one sample he had made a series of seven Burnell marks, and he calculated the burner at red heat would be about 700 deg. C. (1300 deg. Fahr.) and at the bottom the ordinary room temperature. There was one Burnell mark for every 100 deg. of the 700, and the result came out at about 200. Since then he had done the same work with only 5 min. heating.

Gases at High Temperatures

In discussing the paper "Influence of Gases at High Temperatures upon Iron, with Special Reference to the Formation of Blow-holes," by A. Glynne Lobley, Prof. Thomas Turner, Birmingham University, said that the question of the solidity of an ingot, whether of iron or of any other metal, is obviously of the greatest importance. The solidity depends upon two chief factors, one of which is the rate of contraction of the metal, as to whether it can freely feed itself as contraction takes place, and the other is as to the evolution of the gas given off during solidification. That depends first of all, upon the solubility of the gas and the coefficient of that solubility, as to whether the solubility of the gas changes rapidly with change of temperature. He carried out a number of experiments on brass in an endeavor to ascertain the effect upon the solidity of the casting, and it was found that many gases, such as hydrogen, carbon monoxide and sulphur dioxide, etc., might form the atmosphere of the crucible in which the metal was being melted, and still quite satisfactory castings be obtained. It is rather a question of the method of casting, of allowing the metal to cool slightly so as to give off the gas, and then pouring it steadily so as not to splash or to entangle any further gases. To some extent the same thing is no doubt true in reference to the iron which Mr. Lobley had experimented with.

Comparing Steel With Ice

He said that the best illustration in regard to the casting of metals can be obtained from the case of ice

and water. Where ice is allowed to form very slowly, it makes "black" ice, corresponding to a solid metal. If the water be cooled very quickly, so that the gas is not allowed to escape, but remains in the water in the form of globules, an opaque ice is obtained, corresponding to metal worked in a similar manner. Obviously, therefore, what one ought to aim at with regard to the gases is to give the metal time before pouring to get rid of any excess of gas, and then not to have too high or too low a temperature during pouring. To a certain extent those things had been indicated in the paper.

Dr. A. McCance said that the subject of the paper is of the highest practical importance, and bristles with difficulties. With regard to the underlying idea that carbon dioxide is less soluble than carbon monoxide, that is substantially true. But in Lobley's experiments there were so many interfering factors that the conclusions are not quite a definite proof of the idea, because when one passes carbon dioxide into the apparatus in the presence of heated carbon and of molten iron a certain chemical action is bound to take place which will alter the composition of the gases. Unless the composition of the gases is determined it is difficult to say whether, when carbon dioxide is added to that furnace, pure carbon dioxide is obtained in contact with the molten steel. In fact, it may be stated definitely that the pure gas is not in contact with the steel, but that some mixture is really the determining factor.

Cavities vs. Blow-Holes

Dr. T. Swinden, Sheffield, doubted whether the general conclusions are altogether warranted. In effect the conclusions really mean that blow-holes in steel-making practice are due to carbon dioxide. He did not think the data presented sufficient to persuade one to accept that conclusion. In fact, the title would more nearly represent the subject matter if it read "with Special Reference to the Formation of Cavities," rather than blow-holes, because obviously the cavities shown in some of the illustrations were shrinkage cavities and not blow-holes in the ordinary sense of the word.

Keeping the top of the ingot open is important from the practical point of view: Was the exact pressure of gas controlled in each case? That would have a bearing on the setting of the surface during cooling and the speed with which the gas was passed through.

Two of the conclusions are contradictory. One states that the mere solubility of the gases likely to be present in molten iron does not in itself cause blow-holes, as evidenced from the nitrogen experiments; but the first possible suggestion in regard to hydrogen is that the blow-holes are formed, because the hydrogen has dissolved to a very large extent, and has not had time to come out. He took it that blow-holes (in the ordinary sense of the word) are formed during the period of solidification of an ingot, due to gases being evolved. There is considerable evidence in published works to show that hydrogen cannot be ignored in that direction. Miller in the "Carnegie Memoirs" in 1914, analyzed the gases coming off from steel from the liquid to the solid stage while cooling. During the cooling down in the liquid state the gases consist mainly of carbon monoxide.

He gave some figures with regard to that matter: Carbon monoxide was 43 per cent and hydrogen 38 per cent for the first test. During cooling down, the carbon monoxide just before solidification was 40.8 per cent and the hydrogen 28.4 per cent; but immediately the surface of the ingot began to set, the carbon monoxide fell to 24.8 per cent and the hydrogen rose to 60 per cent, and an analysis taken subsequently showed hydrogen as high as 68 per cent and carbon monoxide only 15 per cent. That of course indicates that there is a tremendous evolution of hydrogen at the time of solidification, and if blow-holes are formed he thought it unwise to put forward as a definite conclusion that carbon dioxide is the only cause that one need really seriously consider in avoiding blow-holes in a steel casting.

Author's Closure

Mr. Lobley in reply said that the point had been raised in particular that the blow-holes referred to were cavities. The whole crucible was cooled down as uniformly as possible, and the gas current was not powerful during the cooling down, so that there would be little or no influence which would cause the top to cool before the bottom. Thus one would not expect to find cavities drawn in, in other words, piping.

As to hydrogen and nitrogen, the solubility of hydrogen of course is much greater, and the very large change at the melting point accounts for those two paragraphs which Dr. Swinden thought contradictory. Hydrogen, under the conditions, might be causing the blow-holes, because it could not get away quickly enough. That brought in the point of the rate of cooling, and in their future work they would be able to control that from very rapid to very slow cooling.

Record Building Volume in April

Building contracts placed in 36 States in April made the largest monthly total on record, according to F. W. Dodge Corporation. The total, which includes about seven-eighths of all the construction volume of the country, amounted to $546,970,700. This was an increase of 14 per cent over March and of 13 per cent over April, 1924. Residential buildings continued to occupy the leading position, with 47 per cent of all value. Public works and utilities at 17 per cent, commercial buildings at 12 per cent and industrial buildings at 9 per cent ($46,567,900) followed.

During the first four months of this year the construction started has amounted to $1,623,540,000, a gain of 7 per cent over the $1,515,043,200 for the first four months of 1924. About half of the gain is represented in public works and utilities.

Increase in the Pittsburgh district, as compared with last year, was marked. The gain of April over the same month of 1924 was 68 per cent, while the gain for the four-month period was 70 per cent. In the Central West, including the area west of Ohio and east of Colorado, April construction ($157,668,200) was the highest monthly tonnage on record and the figure for four months was 26 per cent above last year.

Pittsburgh Steel Co. Earnings Show Gain

Net profits of the Pittsburgh Steel Co. for the first quarter showed a substantial gain over those of the same period last year, but for the nine months ended with March the company had profits of less than half those of the same period a year ago. The total value of the sales for the longer period was $1,213,321 less than in 1924, while net profits were $607,201, against $1,317,007 a year ago.

The figures for the two periods compare as follows:

Quarter ended March 31	1925	1924	Increase
Sales	$8,937,271	$7,431,049	$1,506,222
Net profits	752,557	424,235	328,322
Nine months ended March 31			
Sales	17,707,290	18,920,611	*1,213,321
Net profits	607,201	1,317,007	*709,806

*Decrease.

Building Cooperative Factory to Cut Costs

A cooperative factory building is about to be erected in Long Island City, N. Y. The plans call for an 8-story reinforced concrete building, 100 x 200 ft. The building will be erected by the TAB Building Construction Corporation on a 100 per cent cooperative ownership plan. Among the features are two 10-ton freight elevators, 8 x 18 ft., which will enable the tenant owners to run trucks right on the elevators and up to their own floors, for loading and unloading.

Mechanical stokers sold in April by 13 establishments are reported by the Department of Commerce at 120, aggregating 47,627 hp., compared with 131 in March, amounting to 71,099 hp., and with 89 in April, 1924, amounting to 47,939 hp.

Grinder with Speed Compensating Arrangement

Constant peripheral speed regardless of the diameter of the grinding wheels is the outstanding feature of the grinding machine here illustrated, which has been developed recently by the United States Electrical Tool Co., Cincinnati. This speed adjustment is automatic, the motor control being connected to the movable wheel guard so that as the latter is moved back to permit access to the wheel, the speed of the motor increases. Increased production and reduction of wheel cost are advantages claimed for this design.

Correct Peripheral Speed Is Automatically Maintained Regardless of Wheel Wear

The motor is entirely inclosed and is equipped with push button control. The spindle is of nickel steel, is heavy and is mounted in four heavy-duty S. K. F. ball bearings. The guards are designed to permit of maximum accessibility of the wheels.

Live Loads Allowable in Design of Buildings

Investigations of building code requirements for live load assumptions in building design indicate wide variation from the practice justified by actual conditions, with resultant waste in some cases and sacrifice of safety in others. The Department of Commerce building code committee, organized by Secretary Hoover to draft recommended uniform requirements for building codes, has compiled available information on the subject and has prepared recommended code provisions based on this information.

The requirements are brief and simpler of application than those of many building codes. The live load on floor space used for residential purposes in general is placed at 40 lb. per sq. ft. For office space and assembly places not subject to standing crowds 50 lb. is specified, and for other floor space in buildings for human occupancy the minimum limit is 100 lb. Industrial or commercial buildings are to be designed primarily for the proposed occupancy and data are given in the appendix by which loads characteristic of different occupancies may be approximated. Roof and wind load requirements are somewhat less than present code practice, with emphasis on the influence of local conditions. Allowance is required in certain buildings for movable partition loads, and floor-to-floor reduction is permitted in high buildings in transmitting the assumed live loads to the footings.

Copies of the report may be obtained from the Superintendent of Documents, Government Printing Office, Washington, for 10c. per copy.

Worthington Diesel Equipment on Ford Motor Ship East Indian

The Ford Motor Co. is having the Sun Shipbuilding Co. convert to Diesel propulsion another of the Shipping Board steam-propelled boats, East Indian, for transporting Ford automobiles overseas. This ship will have two 225-hp. Worthington Diesel engines of the two-cycle solid injection type, direct-connected to electric generators.

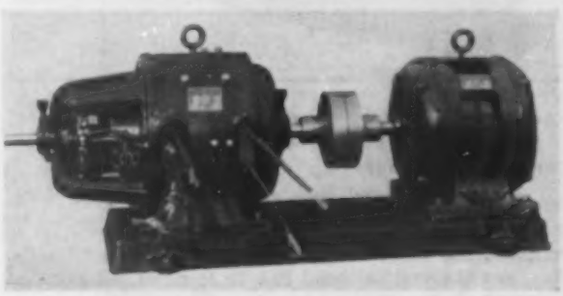
A part of the power derived from these Diesel engines will be used to run Worthington high-pressure three-stage air compressors which will deliver air at 600 lb. per sq. in.—this compressed air is used to maneuver the ship. The East Indian was built in Uraga, Japan, in 1918, is 445 ft. long, with a gross tonnage of over 8000.

Welding Generator Set

Either alternating current or direct current may be drawn from a new motor-generator set developed by the Electric Arc Cutting & Welding Co., Newark, N. J. The same armature winding of the generator serves for either current, there being two collector rings used for the alternating current.

For spot or tack welding, semi-arc, nickel-flash processes of thin cast iron, general cast iron and malleable iron work alternating current appears to give best results. For other classes of work direct current often is preferred. This machine, therefore, permits the use of either current at the option of the welder. One principal feature is that either the a. c. or the d. c. leads can be short circuited at the collector rings or the commutator without injury. The voltage under this condition drops to a value holding the current constant and normal voltage is not resumed until the short circuit is released.

The generator, which is ball bearing, has a power take-off at both ends for driving. An air compressor may be connected at one end if required. The generator may be driven direct or by belt or chain or any other source giving 7 hp., although the arrangement shown in the illustration, with the generator and motor mounted on a single bed plate, is most compact and the one usually favored.



Direct or Alternating Current May Be Employed for Welding in Use of New Generator Set

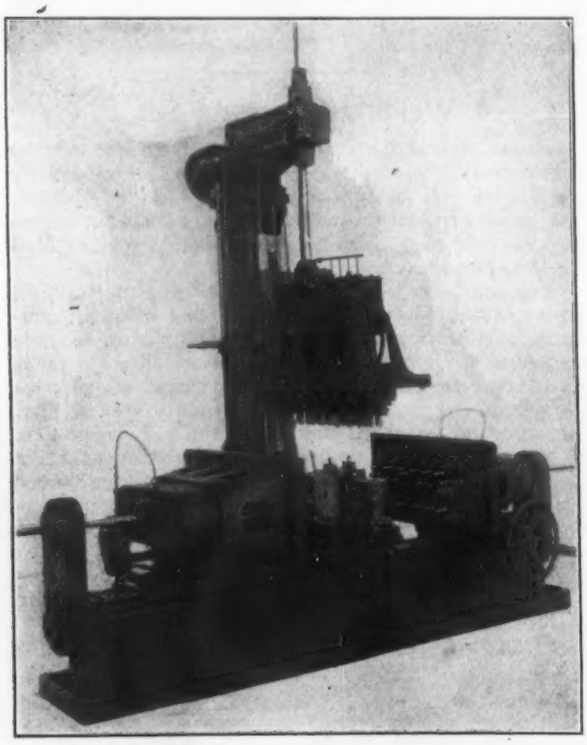
The armature is one complete baked unit with d. c. commutator and a. c. collector rings intricale. Each ball bearing and frame is separately demountable. The field windings of the generator are wound on steel bobbins and baked solid in enamel before being mounted rigidly on the poles.

The Alloy Metal Wire Co., Moore, Pa., manufacturer of nickel, monel metal and electrical resistance wire, has installed a 4 x 10-in. flattening mill, also a chemical laboratory and an electrical bright annealing furnace for the manufacture of bright luster finish nickel chrome wire for use in radio rheostats and potentiometers. The company is installing an electric furnace as well as a 12-in. cold rolling mill and two 3 x 6-in. cold rolling mills for the manufacture of electrical resistance ribbons and strip.

Sixty-eight Holes Tapped Simultaneously

The four-way semi-automatic tapping machine here illustrated is employed in tapping 68 holes simultaneously in Willys-Knight six-cylinder engine blocks, the actual time of tapping being 0.25 min., and the time from floor to floor 0.30 min. A similar machine, used in drilling 68 holes simultaneously in the same engine blocks, the time for the drilling of these holes being 1.3 min., from floor to floor, was described in THE IRON AGE of March 12. Both of the machines were built by the Fox Machine Co., Jackson, Mich.

The machine is equipped with four multiple heads as shown. The left-hand horizontal head has 10



A Lever Moved by the Operator Starts the Tapping Cycle. The four threads feed forward at a speed corresponding to the tap lead, reverse rotation and back out automatically

spindles, the right-hand horizontal head has 23 spindles, and the vertical head has 28 spindles, all spindles carrying ⅝-in. 16-thread taps. The auxiliary horizontal head has six spindles with ⅜-in. 16-thread taps and one spindle with ¼-in. 18-thread taps. The spindles have independent in and out motion and are equipped with floating tap holders and quick detachable tap collets.

The heads are moved both forward and backward by gearing, the heads being advanced at a speed that corresponds with the lead of the taps. The spindles are started rotating in the right-hand direction by one movement of a lever at the front of the machine, and reversal of rotation of the spindles and returning of the heads to the initial position is accomplished automatically, the heads moving backward and stopping at the completion of the cycle. The company's standard tapping controls are employed, those for operating the horizontal heads being at the base of the machine just forward of the large motor. The controls for the vertical head are also of standard type and are located at the top of the machine. Provision is made so that the operator can instantly stop the movement of the heads, and each set of spindles can be advanced independently of the others.

The three horizontal heads are driven by a 15-hp. motor through silent chain, the vertical head being driven by a 10-hp. motor, which is arranged to drive also the lubricant circulating pump. The auxiliary head is mounted on a slide at the base of and inside of the vertical column. The machine weighs 9 tons.

Photographs Inside of Rifle Barrel

A camera which can make a photograph of the whole inside of a rifle barrel has been invented by the Bureau of Standards. It is to be used as an aid in studying the erosion of barrels, and can be used for barrels as small as 30 caliber, which is the bore of the standard army rifle and machine gun.

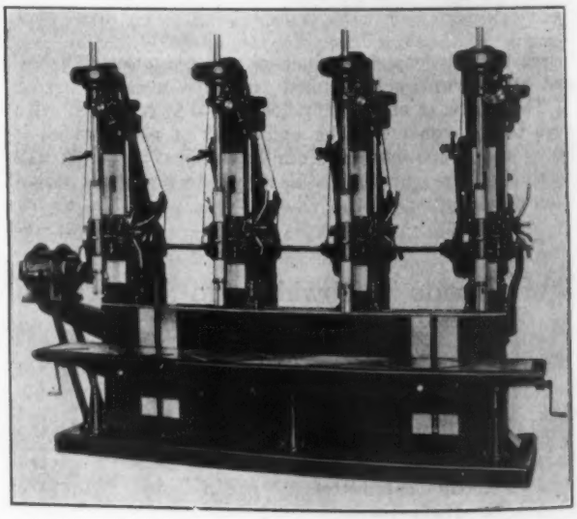
The optical system of the camera is very similar to the periscope of a submarine and is designed to project onto the film an image of a small section of the bore. This section is illuminated by a small electric light carried beside the reflecting prism of the periscope.

The barrel is moved along the periscope at a rate depending on the exposure desired and the film is moved at a corresponding rate. The result is a strip picture running the full length of the barrel but showing only sixth of the circumference of the bore. The barrel is then turned through 60 degrees, the film moved, and the camera and barrel reversed. In this way six strip pictures are made which combined form a complete picture of the bore.

All Geared Sliding Head Gang Drill

The Barnes Drill Co., Rockford, Ill., has brought out a four-spindle sliding-head gang drill, the heads being of the same design as in the No. 263 self-oiled, all-geared ball-bearing single unit described in THE IRON AGE of March 27, 1924.

Adjustable head construction is a feature. The spindle next to the motor remains fixed, the other spindles having a lateral movement in relation to it. The minimum distance between centers of adjacent spindles is 19 in., and the distance between the two outside spindles may be 96 in. The three movable heads travel on top of the column. The machine is also



Center Distances Between Spindles May Be Varied to Suit the Job Going Through This Four-Spindle Drill

available with the spindles fixed on 24 in. centers and either in the box column or independent column styles. In the latter case either square or round columns may be furnished.

Each spindle has eight geared speeds and eight changes of spur geared feeds, all of which are controlled conveniently from the front of the machine.

Alloy Steel Rivet Set

A new rivet set made from alloy steel and intended for use with pneumatic hammers has been added to the line of the Ingersoll-Rand Co., 11 Broadway, New York. It is known as the Jackset and longer life than usual is claimed. Being of a special alloy steel it is said to withstand a much greater degree of heat than usual from hot rivets without the temper being drawn. The set is forged and then heat treated.

Gutters of Steel Plate 375 Ft. Long

Welded Into One Piece, to Expand with the Building—Drastic Method Adopted for Durability of Foundry Roof

BECAUSE of heavy costs for repairs and frequent renewals of roof materials, and particularly of gutters, at the plants of the United States Cast Iron Pipe & Foundry Co., a new method of making the gutters has been put into effect in a group of buildings now being erected at the Burlington, N. J., plant of that company. The gutters at all points, both in the saw tooth portion of the work and at junctions of buildings, are made of ¼-in. steel plate, bent to the proper gutter form and then welded together, with a strap plate under each of the butt welds. These strap plates are first secured to the plates which they join by means of machine screws with countersunk heads. At time of welding, some of the welding metal is fused over the heads of these screws, thus completely protecting them from the weather.

This method of construction is credited to Edward Hering, assistant chief engineer, in charge of structures for the Pipe & Foundry company. The welding itself is being done by the Mattice Engineering Co., 2233 Vine Street, Philadelphia, using for this purpose a special constant current welding unit designed by Col. Royal Mattice.

New Permanent Interlocking Roof Tile to Be Installed

At present the main roof covering is to consist of galvanized corrugated steel sheets, in accordance with long-established custom. These, it is expected, will in due course of time have to be replaced. A new form of roof covering, which has been developed by Mr. Hering, will at that time be utilized in place of the galvanized sheets, but as this now is in process of going through the Patent Office it cannot yet be described. The roof purlins and other features have been designed in the present roofs for the reception of the new material, which will be standardized in dimensions and consist in interlocking tiling.

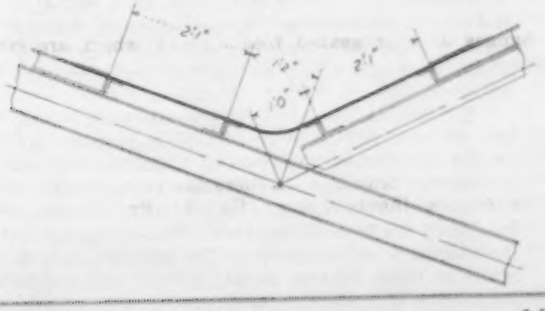
Essentially the Mattice machine consists of a small portable motor-generator set, of which the motor is an Allis-Chalmers alternating current unit of 7½ hp., taking current at 230 volts and running at 1750 r.p.m. This is handled through a Union Electric Mfg. Co. starter with automatic cutout for underload and overload and is direct connected to a direct-current generator bearing the Mattice name plate and giving 200 amperes at 20 volts. One terminal of the generator is connected to one of the building columns to form a "ground." The other is carried through a long flexible cable to the welding handle. Special welding wire is used, of an initial tensile strength stated to be 92,000 lb. per sq. in. In process of fusion this is reduced, but the metal in the weld is reported to have a strength of 80,000 lb. per sq. in. The rate of operation is approximately 2 ft. per hr. This could be bettered considerably were it not for the fact that there is a heavy line drop in pressure from the generating station to the welding machine.

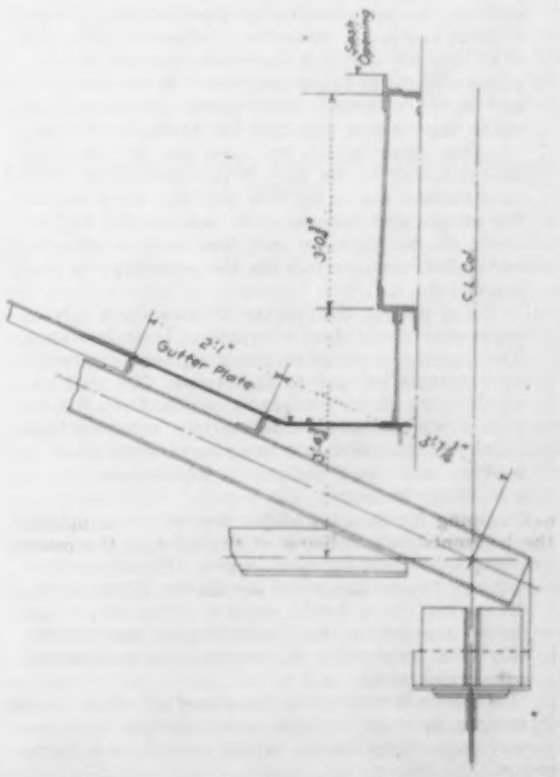
New Plant for DeLavaud Centrifugal Cast Iron Pipe Manufacture

Welding of roof gutters, as outlined in the above paragraph, is being done on a new group of buildings covering a casting building, an annealing building, four cupola houses, with an iron yard behind them, and six cleaning and cutting sheds in bays perpendicular to the long annealing building. The casting building, measuring 120 x 600 ft., and 28 ft. high, has a clear span over that entire area. There are three crane runways, two of 30 ft. span and one of 50 ft., all suspended from the roof structure, without any columns within the building area. This makes a clear floor for working.

In this building there are to be for the present two batteries of a total of six DeLavaud machines, four of them being designed for 4-in. to 6-in. pipe and two for 8-in. to 12-in. pipe. The building has been arranged for ten machines altogether, it being probable that some of the later additions may go beyond the 12-in. size. The pipe from these machines will be handled automatically into the annealing furnaces and it is estimated that capacity will reach 500 tons per day. The plant will be operated on three 8-hr. shifts, running through the entire 24 hr., in place of the present

Solid Plate Gutters the Length of the Building (Shown Black in the Two Sections) Are Made by Welding Together the Ends of Adjacent Lengths of Plate, With a Butt Strap Beneath. Eventually the upper portions of the roof surface will consist of interlocking metal tile





single shift of 10 hr. in the plants now running. Surplus iron from the machines will drop into hopper cars in a subway under the tip of the charging spout of the machines. This will be disposed of once a day, being hauled back to the iron yard and re-entered into the system.

Taking Iron from Barges

Four cupola houses, with two cupolas each, will measure 53 x 60 ft. in each instance. Two of these houses, with four 96-in. cupolas, will constitute the first portion to be erected. The iron yard behind these cupolas stretches for 180 ft. toward the Delaware River and the crane runways, with their 50-ft. span, will project over the river 16 ft. beyond the wharf line. This will permit raising iron by magnet from barges or steamers drawn up alongside.

While the plans call for an annealing shed 60 ft. x 500 ft., only three-quarters of this length is being built now, the remainder being for future extension. The cleaning and coating sheds, stretching eastwardly from the annealing shed, which lies north and south or parallel with the river, will contain the tar tanks, scales, test presses, etc.

Fatigue of Metals in Airplane Parts*

The Future of Light Metal Alloys and Steel—Stress and Fatigue in Welded Parts

BY RUSSELL R. VOORHEES

THE battle between the airship and the battleship isn't the only battle that looms on the horizon today. There is still very much doubt whether alloy metals are better for airplane construction than steel. Tests are continually being made and until enough has been done to definitely determine whether alloys are better than steel, the controversy will most likely go on pro and con with the outcome indefinite. And, in addition to determining whether alloys or steel are better, there is the added question to settle—the stress and fatigue of welded parts. And, until all of this has been cleared up, the future of airplane construction will be somewhat unsettled and uncertain.

At McCook Field, Dayton, Ohio, considerable is being done along stress and fatigue testing lines. Richard R. Moore, chief of the physical testing branch of the materials section, has charge of the investigation and, after considerable work along stress and fatigue lines, has reached some partial conclusions that are interesting:

"Although a sufficient number of tests have not been made to determine whether alloy metals or steel are better suited to airplane construction it strikes me that the final outcome may be that alloys will prove themselves best for certain parts and steel for certain other parts. It seems logical to believe that this may be the final outcome.

"One thing which we have had to take into consideration is the fact that machines of finer construction are needed to test the alloy metals for stress and fatigue than are needed to test steel. So we have not only had to work with the metal but also work with the machines to test the metal.

"The alloys, the lighter metals, have advantages over steel, chief of which is their lightness. This results in the parts being lighter. However, as a counter balance to that is the fact that the alloys cost more and have a lower endurance stress, which must be taken into consideration. However, the difference in endurance stress on a weight basis isn't so great, which acts as an equalizing factor.

"A factor in determining the better metals for airplane construction is the fact that the airplane is subject to considerable vibration which generally adds stress and lowers the life of parts. When we use a metal with a lower endurance stress for parts that must stand considerable vibration which adds stress, we have two factors to contend with.

"One phase of the question of stress and fatigue is that failures under fatigue give no warning. They simply happen and, from a flying standpoint, that is of vital importance. Repeated applications of stress result in ruptures without any warning. Failures under fatigue are due to a spreading of very fine cracks, microscopic in size. The fact that they cannot be seen adds complications to the whole question of fatigue and metal endurance.

"One thing that enters largely into the outcome of this question of steel or alloy metals is the detail of construction of the parts. Notches in construction reduce the endurance limit considerably and so, if we use a metal with a reduced endurance limit to start with, we have two factors to bear in mind in determining the endurance limit of such parts. Then there is the endurance of welded joints, on which we have very little data. However, they present a phase of the question that must be considered. To get back to the notched construction, on some steel parts, notches reduce the endurance limit as much as 50 per cent while notches on parts made of non-ferrous alloys reduce the endurance limit only about 40 per cent on an average.

"It is possible to improve metals by repeated stresses if they are kept under the endurance limit whereas, if they run above the endurance limit, the metals are broken down. That is an important factor to be considered in using metals for airplane construction. Of course, the building up of metals by subjecting them to repeated stresses below their endurance limit raises their endurance limit but there is a limit to this which must be further kept in mind. In some cases the endurance limit has been raised 20 per cent. When we come to steel we find that there is a certain stress at which steel will stand up indefinitely, which represents the endurance limit.

"In determining the value of various metals and alloys for airplane parts, tests must be run considerably longer on the alloys in order to get definite results. Steel tests are run about 10,000,000 times whereas 400,000,000 tests are not infrequent with alloys. After 400,000,000 reversals of stress on non-ferrous metals, we have failed to find any endurance limit, so you see more testing must be done before we can definitely say much about steel and other metals for airplane construction.

"Duralumin has so far impressed itself on us, but we are not quite sure yet. More tests are needed to decide the results definitely. Duralumin has a comparatively low fatigue limit in comparison to its tensile strength, especially when compared with other metals. The endurance of duralumin is one-quarter of its tensile strength while in other ferrous metals it runs about one-half.

*An interview with Richard R. Moore, chief physical testing branch, Materials Section, McCook Field, Dayton, Ohio.

Export Outlook Pictured Bright

Europe's Position, Particularly of Germany, and Common American Attitude Discussed at Cleveland Foreign Trade Conference

OPTIMISM over the outlook for American trade in the world's market was strongly expressed by all the speakers at the Fifth Foreign Trade Conference held in Cleveland May 12 under the direction of the Cleveland Chamber of Commerce. Developments of a political, financial and economic character, such as the Dawes plan, the return to the gold standard in England and other factors were referred to as having the effect of stabilizing and materially improving conditions in Europe.

Addresses were made by four representatives of the bureau of foreign and domestic commerce of the Department of Commerce and round table discussions were held, during which export advertising, export merchandising and export credits were discussed.

Germany Not a Competitor in Machinery

Germany can no longer be considered as much a competitor as she was formerly, declared W. H. Rastall, chief of the industrial machinery division, particularly in the machinery field. He declared that at no time since the armistice has Germany been able to recover her foreign markets and the value of her exports in the past few years has never exceeded one-half that of 1913. While this is partly due to the failure of the consuming countries to purchase as much equipment as formerly, it is also partly due to the increased export business of American manufacture. The United States is exporting a much larger volume of machinery than at any time in pre-war days.

Analyzing the present situation in Germany, he said that prices submitted by German machinery manufacturers in foreign markets recently have been below American levels. However, these prices have been made possible by the abnormal conditions that have existed in Germany, for with the mark at its worst, German manufacturers could produce machinery at perhaps one-third of the American cost. When this condition existed German manufacturers produced large stocks of machinery and they are disposed to sell this machinery at almost any price.

"Although we may expect to hear of abnormal proposals emanating from Germany for some months hereafter," said the speaker, "we also have reason to believe that German manufacturing costs are now above world market levels, and for machinery that is to be manufactured anew, as distinguished from equipment to be taken from stocks, we may expect German quotations at least to equal those made commonly by Great Britain and the United States."

Mr. Rastall declared that conditions in Germany at present make it difficult for that country to sell goods on as liberal credit as it did in pre-war days and he urged American manufacturers not to grant unbusiness-like credits because German competitors have done so heretofore.

"We have now reached the point where Germany is known to occupy a position far less favorable than occupied in pre-war years," he said in conclusion. "Her export trade is no longer subsidized by ridiculous domestic freight rates. The government is no longer able to subsidize foreign business. General business conditions in Germany are disorganized and disturbed. Reparations and taxes bear very heavily on German industry. For many other reasons German competition is far less active than has been the case for a long time and American manufacturers are justified in going into the world's markets with greater assurance because competition is reduced to this extent."

"Has Europe Improved as a Market Under the Dawes Plan?" was the subject discussed by S. H. Cross, chief of the European division. The adoption of the Dawes plan contributed vitally, he said, toward the removal of the abnormal situation that has existed. Germany began to absorb foreign materials and resume shipments to overseas markets. It can hardly be expected that the general stabilization in Europe will result in an increase in the European demand for American manufactured products as marked as that for raw materials. However, the fundamental strength of American enterprises derived from high-grade mass production and labor efficiency guarantees in Europe and extending markets for specialties turned out under these favorable conditions. He spoke particularly of the foreign market for automobiles, labor saving devices, office equipment and electrical appliances. Automobiles and typewriters are striking examples of American quality products that have surmounted the handicap of competition from manufacturers in countries to which they are shipped.

The speaker called attention to the increase in trade in western Europe since the forces of stabilization have started or during the period from July, 1924, to February, 1925, and mentioned particularly the increased sales to Germany of both finished material and raw produce. On the other hand, he said, it is not altogether clear what the future of this expanded trade will be when the influx of foreign credits comes to a standstill and the full annuities of the Dawes plan become applicable.

Mr. Cross predicted that the United States is destined to retain the dominating position as the supplier of raw materials to Europe, and with the improved standard of living, a sustained demand for quality manufactured goods, such as the United States produces, is likely to continue. The tactical position of the United States in its trade with Europe is stronger than 18 months ago, and while industrial revival on the Continent will result in increased competition from European manufacturers, it may be expected that the slow process of restoring European prosperity will promote a heavy demand for American raw materials, foodstuffs and specialties.

Export Interest Shifting with Vibrations of Domestic Demand

The importance of developing foreign markets was discussed and the policy of some American manufacturers, who use the foreign fields as a dumping ground and neglect their trade abroad when business is good at home, was criticized in an address by Dr. Julius Klein, director of the bureau of domestic and foreign commerce, at an evening dinner session held at the Mid-Day Club. He took for his subject "Why Bother with Export." He referred to the action of a group of British firms representing prominent American manufacturers, who some time ago announced that they were through for all time with the unreliability of American business executives, because the export interest of their American connections shift with every vibration of domestic demand. While the situation is not so bad today as then, it is still serious, he said. Good will must be maintained in our foreign markets at whatever cost.

"Overseas sales are only 10 to 15 per cent of our total production," he said, "but it takes only a small margin on the wrong side of the ledger, even as low as 5 per cent, to put a firm in the hands of a receiver. When the next dip in the business curve comes, the firm with a carefully planned export plan will possess a tried and practicable insurance policy to check the flight downward."

Swedish Iron Ore Mining

Some of the Fields of the Grängesberg Co. Lie North of Arctic Circle—High Iron Content and Easy Access Are Features

BY A. BOGENHOLM SLOANE

FROM both industrial and financial viewpoints few Swedish business undertakings hold as dominating a position as the "Trafikaktiebolaget Grängesberg-Oxelösund," or Grängesbergsbolaget (Grängesberg Co.). Not only are many branches of industry grouped around this name, but the activities of the company include also a widely branched out railroad traffic and an important shipping industry. Its iron mining interests are particularly extensive.

The Grängesberg mining field is located in the province of Dalecarlia, a short distance north of Stockholm. The entire field has a length of 4500 meters (2.8 miles) and a breadth of 400 meters (¼ mile). The total ore area of this field is about 94,000 square meters (23¼ acres). The ore body at a depth of 500 meters (1600 ft.) has about the same area as at the surface. The quantities of ore at this depth have been calculated at about 100 million tons, and there are indications that the quantities below this level are much greater.

Ore found in the Grängesberg field is of two kinds, apatite ore, which is a fine grained magnetite, generally containing 62 per cent iron and 0.8 to 1 per cent phosphorus, and the so-called "Segmalm," which is a thin, slaty hematite, containing magnetite with a lower percentage of phosphorus, generally varying between 0.07 and 0.30 per cent. The total area contains 84 per cent apatite ore and 16 per cent segmalm. Up to 1923 the ore production in the Grängesberg field, belonging to the company, amounted to 19,398,743 tons.

In 1883 the Grängesberg Co. started rational mining. This was for many years done in open stopes, where the ore was loaded direct onto railroad trucks and later hoisted in shafts in the hanging wall. However, the constantly increasing demand for ore made it necessary to use underground mining, and in 1897 a shaft was sunk to the depth of 190 meters, or about 625 feet, followed by another shaft of the same depth the next year.

At the same time the underground mining was arranged after the system of stoping by shrinkage, and at present most of the ore is mined in that way. The draw-off ore, mixed with rock, is put through cobbing plants and the fine goes through concentrating mills. The power required is produced at four power stations. Under ordinary circumstances at Grängesberg they deliver about 3500 kw. alternating current. The mining company transports the ore on its own railroads to Oxelösund on the Baltic Sea, where it is loaded into ore steamers.

Mining in the Arctic Region

It was not until the big deposits of Lapland had been acquired that the company reached the prominent position it now occupies in the mining industry. These deposits are situated north of the Polar Circle, 17 to 22 deg. East of Greenwich and between 67 and 68 deg. North. The two deposits, Gellivare and Kiirunavaara ore mountains, are connected with the Gulf of Bothnia, near its northern end, and with Narvik on the Atlantic Coast, by a railroad 480 km. (300 miles) long, the latter port being open the year round.

Most of the ore deposits in Lapland show a certain similarity to each other with regard to the quality of the ore and their geological relations, forming a group distinctive from the iron fields of Central Sweden. As a rule the ores are connected with eruptive, though much altered, rocks, quartz-phorphyries, syenite-porphyries and fine grained syenites and leptites, belonging to a younger division of the Archaean.

Particularly characteristic of most of the ores is their unusually high percentage of iron, in general a high percentage of phosphorus and an insignificant percentage of silicates. In the most important of the ores, those in Kiirunavaara, Luossavaara and Gellivare, the sum of iron oxides and apatite varies, as a rule, between 92 and 98 per cent.

The percentage of iron in the ores that are now mined is rarely less than 60 per cent, and occasionally amounts to 68 to 69 per cent or more. The percentage of phosphorus is high, as a rule, varying between 0.6 and 3.5 per cent or more. But ores are produced also with a guaranteed maximum percentage of phosphorus of 0.6 and 0.3, and also an ore suitable for acid Bessemer, with a maximum of 0.03 and 0.05 per cent. The sulphur in the Lapland ores rarely exceeds 0.05 to 0.08 per cent.

Two Mountains of Ore

Both ore mountains, Kiirunavaara and Luossavaara, rise to a considerable height, one on each side of the flat valley through which the railroad runs between the ports of Lulea and Narvik. Kiirunavaara is a ridge running north and south about 3.5 km. (2⅛ miles), divided into a number of more or less isolated hills, of which the highest is about 748 meters (2450 ft.) above the sea, and 248 meters (800 ft.) above the bed of the valley. The ridge consists of an almost continuous body of iron ore, extending northward into the boggy ground and into the neighboring lake, so that the whole deposit has a length of more than 5 km. (3.1 miles).

In the ridge itself the ore is generally fully exposed, but is in some places covered by a thin layer of moraine. The ore is surrounded by eruptive rocks of somewhat different nature in the foot-wall and in the hanging-wall. On the eastern slope of the mountain the hanging wall consists of porphyries and the foot-wall of gray or brownish gray syenite porphyries. In Kiirunavaara the ore body itself is nearly devoid of rock intrusions. From a commercial point of view, and with principal regard to the percentage of phosphorus, the ore is at present classified as follows:

A—ore, maximum 0.05 per cent phosphorus, about 69 to 70 per cent Fe.
C. I—ore, maximum 0.3 per cent phosphorus, about 67 to 68 per cent Fe.
C. II—ore, maximum 0.8 per cent phosphorus about 66 per cent Fe.
B—ore, maximum 0.1 per cent phosphorus, about 67 to 69 per cent Fe.
D—ore, between 0.8 and 2.0 per cent phosphorus, about 62 per cent Fe.

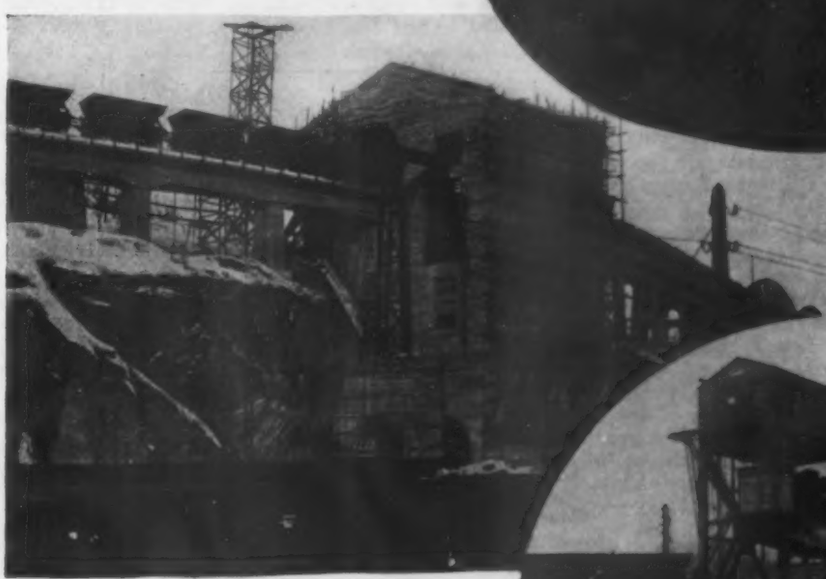
Bared or otherwise well-known ore has an area of 329,000 square meters; other parts of the deposit, known chiefly by diamond drillings and magnetic survey, about 107,000 square meters, or together 436,000 square meters (108 acres). The result of the drillings justifies the conclusion that the ore continues to a great depth, and this assumption has been strongly confirmed by an extensive magnetic survey. It has been estimated that Kiirunavaara contains about 740,000,000 tons of ore.

Mining in Kiirunavaara is carried on in open stopes, generally 20 meters (65 ft.) high. The ore is loaded into small cars and brought down the stopes of the mountain by a number of inclines. During recent years, however, this system of transport has been changed, most of the ore being loaded by electric shovels. The big lumps are reduced by giant crushers and then dumped into vertical shafts, coming out into a

Bridge Crane for Ore Loading at Oxelösund (Right)

Steamers at the Ore-Loading Pier at Narvik, Norway (Left)

Open Stopes at the King Oscar Mine, Malmberget, Lapland (Right)



Car Dumper in Action at Narvik (Below)

New Ore-Crushing Plant at Narvik, Norway, Showing the 6-Wheel Cars Used (Above)

railroad tunnel at the foot of the mountain, where it is loaded into railroad trucks.

Gellivare iron mountain, situated 100 km. (62 miles) south of Kiiruna, consists principally of red leptité, intersected by large and small dikes of granite. The ore deposits occur as several complexes of lenses, crossed by numerous granite dikes. Taking into consideration all that is known of the deposits, it has been calculated that to the 500 meters (1640 ft.) level there are 240,000,000 tons, and great quantities below that level.

Actual mining at Gellivare iron mountain was started in 1892, and since then to the end of 1923 about 26,788,000 tons have been produced. In Kiirunavaara mining has been carried on since 1903, and the production up to the end of 1923 amounted to 42,634,884 tons.

Most of the ore from Gellivare is exported from the Gulf of Bothnia, and the Kiirunavaara from Narvik in Norway, where the company has up-to-date quick-loading devices. The ore pier at Narvik, built of granite, with wood and iron superstructure, has a length of 345 meters (1130 ft.), so that two steamers can load simultaneously. The ore contents of the railroad cars are emptied from the quay through spouts direct into the vessel, by which means a loading capacity of 1000 tons an hour is reached. The Grängesberg Co. has its own steamship department, the fleet now numbering 24 vessels, with a total loading capacity of 148,000 tons.

Iron Content of Lake Superior Ore Well Maintained

The average iron content of Lake Superior ore in 1924 showed little change as compared with recent years, according to the annual report covering average of analyses published by the Lake Superior Iron Ore Association and including a ten year period. Tables are given showing the average analyses of the different grades of ore from all the ranges. These include the iron natural, phosphorus, silica, manganese and moisture. There are also tables of average analyses of total tonnages by ranges. Included also are charts showing the average iron content of the total tonnage by ranges and combined ranges for a 12-year period and the average iron content by ranges and combined ranges of the other components from 1902 to 1924.

The average iron content for all grades and for all ranges as shown by the report was 51.72 per cent of iron natural in 1924, as compared with 51.79 per cent in 1923. While this is slightly lower than the three preceding years, it is higher than in any year from 1915 to 1920 inclusive. The peak in the ten-year period was in 1921, when the average iron content was 52.07 per cent, but in that year shipments were less than 23,000,000 tons and included a larger percentage of richer ores.

The average percentage of iron content in a way is somewhat misleading because the average was cut down a little last year by an increase in shipments of silicious ores that have a low iron content. Of the ore shipped in 1924, 2.3 per cent was silicious, as compared with 1.9 per cent in 1923.

The average iron content on Mesabi range, which produces two-thirds of the ore, was 51.93 per cent last year, as compared with 52.02 per cent in 1923. While slightly lower than during the three preceding years, the 1924 iron content from this range was higher than in any year from 1915 to 1920. This average is being kept up by beneficiation methods employed on the Mesabi range, where there are several ore washing plants, as well as by the more careful grading of ore.

The average iron content of Bessemer ore last year was 54.80 per cent, the largest in ten years, except in 1923, when it was 54.98 per cent. The average of low phosphorus non-Bessemer ore last year was 51.25 per cent, as compared with 51.09 per cent in 1923, and the largest in ten years, except in 1922, when it was 51.35 per cent. The average of high phosphorus non-Bessemer ore was 50.86 per cent, the same as in the previous year.

Taking the production of all grades by ranges and comparing with the previous year the iron content last year increased on the Gogebic range from 52.49 to 53.28 per cent, on the Menominee range from 50.38 to 50.60 per cent and on the Vermilion range from 56.74 to 57.96 per cent. It decreased from 52.02 to 51.93 per cent in the Mesabi range, from 51.31 to 49.76 per cent in the Marquette range and from 45.74 to 45.30 per cent in the Cuyuna range.

The phosphorus content showed a slight increase last year, being 0.100 per cent, as compared with 0.095 per cent during the previous year. The range in the ten-year period has been from 0.087 to 0.108 per cent. In the Mesabi range last year it was 0.063 per cent, as compared with 0.062 per cent the previous year.

Carnegie Steel Lets First Unit for Its New "H" Beam Mill

Construction of the new structural mill at the Homestead works, Carnegie Steel Co., is progressing steadily. The first part of the new installation, the 28-32-in. mill will be completed this year and the company now is making ready for a start on the new H beam mill. Serving this unit will be a 54-in. blooming mill and three 52-in. mills, a rougher, intermediate and finishing unit. All are to be electrically driven, the bloomer by an 8000-hp. and the others by 7000-hp. reversing motors. The company will transfer one motor from the old structural mill to drive one of the units of the new mill, and has just placed the order for the other motors, with flywheels, motor-generator sets and other auxiliary equipment with the Westinghouse Electric & Mfg. Co., which furnished the electrical equipment for the new 28-32-in. mill. The order for the 54-in. blooming mill, tables and manipulator, has been placed. This mill will be the largest blooming mill ever built and will weigh about 3000 tons, and used in conjunction with three 52-in. beam mills. A 44-in. blooming mill with all auxiliary equipment is being completed by the United company for this plant.

Lake Iron Ore Shipments in April

Iron ore shipments from the Lake Superior region in April were 2,120,670 gross tons, or 221.61 per cent larger than in April, 1924. The increase amounts to 1,461,283 tons. The comparative shipments by ports for April, this year, and the same month in 1924 are as follows in gross tons:

	April, 1924	April, 1925
Escanaba	98,342	288,823
Marquette	12,117	53,197
Ashland	72,028	235,289
Superior	224,064	534,137
Duluth	136,847	683,604
Two Harbors	115,989	325,620
Totals	659,387	2,120,670
Increase		1,461,283

Great Northern shipments this year were only 21.22 per cent of the total as against 30 per cent in April, last year. Duluth, last month, contributed 32.24 per cent of the total as compared with 20.75 per cent in April, 1924.

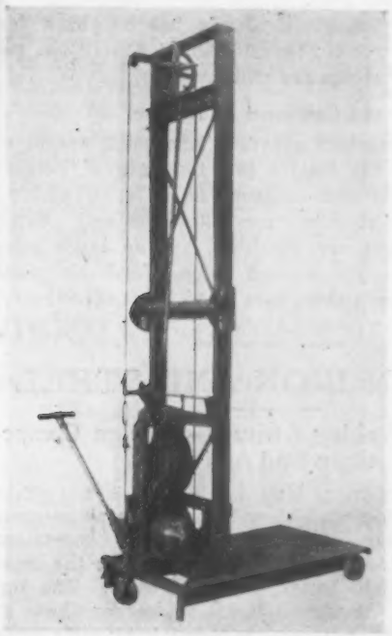
New High Records in American Exports in 1924

Attention is called by the Chamber of Commerce of the United States, Washington, to the fact that, in a number of important items of export, new high records were made by the United States in 1924. Exports of agricultural machinery and implements, for instance, at $59,974,000, exceeded all previous figures, in spite of the fact that some of the earlier exports were priced at the inflated values of 1920. Typewriters, 270,000 in number, were shipped abroad in 1924—the largest number since quantity data have been available. Automomiles to the number of 178,883 were exported, making a new record, displacing the 171,644 record of 1920.

Light-Duty Tiering Machine with Worm Drive

A light-duty tiering or stacking machine with worm drive, believed to be the first of this type to be placed on the market, has been brought out by the Lewis-Shepard Co., Watertown Station, Boston. The machine is arranged for operation from an electric light circuit.

A ½-hp. motor is employed, and lifting speeds range from 9 ft. per min. on 1000-lb. capacity stackers to 14 ft. on 500-lb. capacity machines. A "deadman" type of controller is used, and there are limit stops at both top and bottom. The machine can be equipped with an elevator type of control, permitting the operator to ride up with the load and stop the lifting platform at the height desired. Other features include the lifting and steering handle by which the front feet of the stacker may be elevated not less than 1¼ in. above the floor; after elevating, the handle can be used for steering. The hinge lock is of an improved type, being automatic in action, so that when the top section of the stacker is elevated the lock becomes effective. A pipe handle of convenient length is standard equipment to facilitate the lowering of the upper section without danger of accident.



Worm Drive Is a Feature. Operation is from a lighting circuit

The machine may be used conveniently in piling and unpiling materials, and for work around the ceilings, such as hanging and oiling shafting and motors.

Greater Employment in Metal Trades

The fourth consecutive increase in employment since December was reported for the month of April by 807 shops, embraced in the membership of the National Metal Trades Association, Chicago. The total number of employees in April was 589, 272, as against 576,533 for March, 551,385 for February, 544,807 for January, and 530,580 for December, 1924. The same shops reported 519,997 employees in June, 1924. These plants are located in New England, New York, Pennsylvania, Ohio, Indiana, Michigan, Wisconsin, Illinois, Iowa and Missouri.

Freight Rates of Scrap Copper

WASHINGTON, May 19.—The Interstate Commerce Commission last week ordered suspended from May 16 to Sept. 13 schedules proposing to cancel a commodity rate of 25½c. per 100-lb. applicable on scrap copper, carloads, from Chicago to Erie, and Pittsburgh, Pa., and Buffalo and apply a class rate of 27½c.

Cooperative Employee Insurance in Casting Plant

Group insurance supplemented by certain service advantages has been provided for its employees by the East St. Louis Casting Co., East St. Louis, Ill. The plan, underwritten by the Metropolitan Life Insurance Co. is cooperative, as the employer and employees jointly pay the premiums. The total coverage is $70,000 life insurance.

The schedule provides life insurance ranging from $1,000 for rank and file employees to slightly larger amounts for foremen, department heads and executives, while sick benefits under a health and accident policy amount to $10 a week for a maximum of 26 consecutive weeks, for the workmen, with a different arrangement applying for other classifications.

A feature of the insurance contract is the disability clause. This guarantees the full payment of the insurance, in monthly installments, to any contributing employee who becomes totally and permanently disabled before the age of 60 years. The payment will be made for a stipulated period, during which premium collections are waived.

Among the supplementary service advantages are a free visiting nurse service and the distribution of booklets on health subjects and sanitation. Under the nursing arrangement a sick employee may summon a nurse, who will act in an advisory capacity and help carry out the attending physician's instructions.

The Baltimore Brass Co., Baltimore, has joined with its employees in establishing a group life insurance. Employer and employees jointly pay the premiums. Each rank and file employee, who contributes to the plan, receives $1,000 life insurance protection. Any employee who becomes totally and permanently incapacitated before the age of 60, gets the full amount of his insurance paid in equal monthly installments. A free visiting nurse service and a department for the distribution of booklets on health subjects and sanitation are provided.

Freight Rates in Alabama Regarded Out of Line

WASHINGTON, May 19.—Passing upon a complaint by the Chamber of Commerce of Pensacola, Fla., the Interstate Commerce Commission, in a decision last week, found that intrastate rates on iron and steel products and cast iron pipe in carloads from the Birmingham district to Mobile, Ala., resulted in undue prejudice to Pensacola, undue preference and advantage to Mobile, and unjust discrimination against interstate commerce. At the same time it was found that the rates from the Birmingham district to Pensacola were not unreasonable.

Recognizing that before intrastate rates can be raised in Alabama, it is first necessary to obtain the consent of the Alabama commission, the Interstate Commerce Commission did not order the Alabama rates eliminated. It stated that it was of the opinion that before any order requiring the removal of undue prejudice was entered the Alabama authorities should be given a chance to approve appropriate revision of the intrastate rates. In the event this proposed method of procedure does not within a reasonable time bring about the relief required, the situation might be brought to the attention of the commission for further consideration.

Authorities and shippers in Alabama appeared in opposition to the complaint, while the American Cast Iron Pipe Co. intervened in favor of it. The decision, written by Commissioner Hall, said that the rate situation against which complaint had been made had existed only since July 1, 1923, and had resulted from a fourth section order of the commission. In removing the fourth section departures it was said the carriers increased the interstate rates so as to put them on a parity as applied to both Pensacola and Mobile, except that on scrap iron and in some cases on cast iron pipe rates to Pensacola were higher than to Mobile. The decision said that the state rates were the same as or less than the interstate rates previously applying.

European Markets Mostly Waiting

Micawber Attitude Forced by Dull Business—German Automobile Tariff Question Alive—Stagnant in Great Britain

(By Cablegram)

LONDON, ENGLAND, May 18.

PIG iron is dull and weaker, in spite of further curtailment of output which shortly will be in operation. Pease & Partners, Ltd., are closing the Tees Bridge Works and possibly may close the Skinningrove Works until September. Hematite is rather more active, but at sacrifice prices, East Coast mixed numbers having sold at 80s. 6d. ($19.52) f.o.b.

Foreign ore is dull as regards consumers on this side of the Channel, but Italy has made further purchases. Sellers of Bilbao Rubio ask 22s. ($5.34) c.i.f. Tees.

Finished steel is dull. Export prices for sections are weaker, but few buyers have been attracted. The breaking up of the domestic Steel Association is reflected in a better tone in the domestic trade. By cooperation of ship owners, shipbuilders and steel makers, a contract for eight new vessels of the Blue Star Line, totaling £2,700,000 ($13,100,000) has been secured for British yards. The United Steel Companies, Sheffield, have secured an order for 5000 tons of rails for India.

April exports of pig iron were 38,316 tons, of which 5545 tons went to the United States. Total iron and steel exports were 297,458 tons.

Sheets and Tin Plate

Tin plate is easier. Richard Thomas & Co., Ltd., Swansea, booked a contract for 500,000 boxes of oil plates for third-quarter shipment at 19s. 9d. ($4.79) basis, f.o.b. The market is somewhat perturbed by the low price taken. Most makers are quoting generally 20s. 3d. ($4.92) basis, f.o.b. There is good all-around inquiry and fair business done, with prospects for increasing volume. Tin plate bars are officially £7 ($33.95). Outside makers are open to consider offers at £6 12s. 6d. ($32.12).

Galvanized sheets are steady. There has been some recent Indian buying up to September shipment, but no large individual lines.

Black sheets are quiet. Japan has bought a few small lines of 6 x 3 ft., 13s., 107 lb. at £15 (3.25c. per lb.), but makers' stocks are still large.

On the Continent of Europe

Continental markets generally are quiet, except as to India, which has bought fair tonnages of Belgian joists (beams) for June shipment at £5 7s. 6d. (1.16c.) f.o.b. Other specifications are difficult to sell. Semi-finished consumers are inquiring, but no large sales have been made yet, though some Welsh tin plate makers have bought sheet bars at £5 15s. ($27.89) c.i.f. Wales.

BELGIAN IRON AND STEEL

Market in a Waiting Attitude—Foreign Competition Still Active

BRUSSELS, BELGIUM, May 7.—Market is uncertain and prone to weakness, although the works make some show at resistance. Some further slight concessions have been granted for important orders, but the market seems certainly better than last week. The impression is that the utmost limits of decrease have at last been reached. With a view to bettering their costs a number of firms, as for instance, Cockerill and Differdange, have raised their production.

Foreign competition remains active, if a little less fierce, for the last days of the week. Business with America has not been bad lately. Buyers appear to be on the lookout for an opportune moment to place orders; if it is really so, one might expect greater activity for the beginning of June.

Pig Iron.—Market is stationary but with an undercurrent of resistance; demand is satisfactory and slightly better than preceding week; British offers are

British and Continental European prices per gross ton except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.85 per £1, as follows:

Durham coke, del'd	£1	2½s.			$5.47			
Bilbao Rubio ore†	1	2½			5.47			
Cleveland No. 1 fdy.	4	1			19.64			
Cleveland No. 3 fdy.	3	16½			18.55			
Cleveland No. 4 fdy.	3	15½			18.31			
Cleveland No. 4 forge	3	14½			18.07			
Cleveland basic	3	15½			18.31			
East Coast mixed	4	0½	to £4	1s.	19.52	to	$19.64	
East Coast hematite	4	19	to 5	0	24.01	to	24.25	
Ferromanganese	15	10			75.18			
*Ferromanganese	15	5			73.96			
Rails, 60 lb. and up	8	10	to 9	0	41.23	to	43.65	
Billets	7	0	to 8	0	33.95	to	38.80	
Sheet and tin plate bars, Welsh	6	12½	to 7	0	32.13	to	33.95	
Tin plates, base box	1	0¼	to 1	0½	4.92	to	4.98	
					C. per Lb.			
Ship plates	8	12½	to 9	2½	1.87	to	1.97	
Boiler plates	12	10	to 13	0	2.71	to	2.82	
Tees	8	10	to 9	0	1.84	to	1.95	
Channels	7	15	to 8	5	1.68	to	1.79	
Beams	7	10	to 8	0	1.62	to	1.73	
Round bars, ¾ to 3 in.	9	0	to 9	10	1.95	to	2.06	
Galv. sheets, 24 gage	16	10	to 16	12½	3.58	to	3.61	
Black sheets, 24 gage	11	10			2.50			
Black sheets, Japanese specifications	15	5			3.30			
Steel hoops	10	15	and 12	10*	2.33	and	2.71*	
Cold rolled steel strip, 20 gage	16	0			3.46			

*Export price.
†Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

Foundry pig iron: (a)								
Belgium	£3	12s.	to £3	13s.	$17.46	to	$17.70	
France	3	12	to 3	13	17.46	to	17.70	
Luxemburg	3	12	to 3	13	17.46	to	17.70	
Basic pig iron: (a)								
Belgium	3	11	to 3	12	17.22	to	17.46	
France	3	11	to 3	12	17.22	to	17.46	
Luxemburg	3	11	to 3	12	17.22	to	17.46	
Billets:								
Belgium	5	5			25.46			
France	5	5			25.46			
Merchant bars:					C. per Lb.			
Belgium	5	12½			1.22			
Luxemburg	5	12½			1.22			
France	5	12½			1.22			
Joists (beams):								
Belgium	5	8			1.17			
Luxemburg	5	8			1.17			
France	5	8			1.17			
Angles:								
Belgium	5	18½	to 6	0	1.28	to	1.30	
¼-in. plates:								
Belgium	6	17½			1.49			
Germany	6	17½			1.49			
⅜-in. ship plates:								
Luxemburg	6	17½			1.49			
Belgium	6	17½			1.49			

(a) Nominal.

still very low. Lorraine and Luxemburg quote same prices as ourselves: i. e., 350 to 355 fr. ($17.95 to $18.20) f.o.b. Antwerp. With regard to basic iron, available material is nil; Cockerill and Differdange have each relit one blast furnace for basic, which is quoted at 335 to 340 fr. ($17.20 to $17.45).

Semi-Finished Products.—Just a little more favorable; there have been some fairly good dealings with England; available material is limited. At inland quotations for basic steel: blooms, 470 to 475 fr. ($24.10 to $24.35); billets, 490 to 495 fr. ($25.15 to $25.40); largets, 510 to 515 fr. ($26.15 to $26.40) f.o.b. Antwerp; blooms, £5 1s. to £5 1s. 6d. ($24.44 to $24.56) billets, £5 3s. 6d. to £5 4s. ($25.05 to $25.17); largets, £5 5s. 6d. to £5 6s. ($25.53 to $25.65).

Iron.—Market is dull and depressed, for the current of orders is of the slightest. In many works there is a stoppage of work several days a week. Inland quotations for iron No. 3 are 570 to 580 fr. ($29.25 to $29.75); for export, £5 17s. 6d. ($28.44); for No. 4, which is rare, because difficult to manufacture, quotations are at least £7 10s. ($36.30), f.o.b. Antwerp.

Steel.—Market for bars is weak, but here also there is an under-current of resistance. Inland business was done at a minimum of 530 to 535 fr. (1.21c. to 1.23c. per lb.), but it is said that certain producers have been able to secure better prices. Export prices have varied, according to the importance of orders, from £5 12s. to £5 13s. (1.21c. to 1.22c.). Beams have fluctuated between 520 and 530 fr. (1.19c. and 1.21c.), inland, and between £5 7s. and £5 8s. 6d. (1.15c. and 1.17c.), f.o.b. Antwerp.

Wire rods are weak and discussed further to competition on German and Sarre sides. Inland quotations are 590 fr. ($30.25); for export, £6 7s. to £6 12s. 6d. ($30.73 to $32.06).

Sheets.—Calm, and inclining to weakness. Lorraine competition is most felt on heavy and medium sheets. Inland quotations for sheets of 5 mm. (No. 6½ gage) and above, 675 fr. (1.55c. per lb.); for export, £6 17s. to £6 17s. 6 d. (1.47 to 1.48c.). Sheets of 2 and 3mm. (No. 14 and No. 11½ gage), 715 fr. and 820 fr. (1.64c. and 1.88c.); f.o.b. Antwerp, £7 and £7 6s. (1.51c. and 1.58c). After their decrease, light sheets have taken to resisting at 900 to 1125 fr. (2.06c. to 2.58c.), for 1.5 mm. (No. 16½ gage) to 0.5 mm. (No. 25½).

Scrap.—Market is slack and operations are rare. Heavy scrap is quoted 390 to 400 fr. ($20 to $20.50); scrap for blast furnaces, 260 to 270 fr. ($13.35 to $13.85); scrap for openhearth use, 290 to 295 fr. ($14.90 to $15.15); shavings, 210 to 220 fr. ($10.80 to $11.30), and first choice mechanical iron, 365 to 375 fr. ($18.70 to $19.20).

GERMAN IRON AND STEEL

Some Improvement Noted — Automobile War Regarding Tariff Has Direct Repercussion for America

BERLIN, GERMANY, May 5.—The general trade situation continues to improve, but in the iron, steel and metal-consuming industries, with certain exceptions, the improvement is not marked. Reports of slight increases of activity are followed by reports of slight set-backs. On the whole, however, home business is good, and the steel works and rolling mills have orders sufficient to keep them going for several months. Export in the heavy branches, except for wire rods, is dull; but foreign orders for the engineering branches have slightly increased. Shipbuilding is still badly depressed. The chief improvement in heavy material is confined to North-West Germany.

Upper Silesia, and the Siegerland, Lahn, and Dill ore and smelting districts have still serious unemployment. In Upper Silesia the main troubles are shortage of working capital, and foreign competition. English and Czech iron is offered in the natural markets of the Upper Silesian works at below the local syndicate prices. Of 15 German Upper Silesian blast furnaces only 7 are in blast. The financial situation of the western steel concerns is also not satisfactory; and the Prussian Ministry of Trade holds that a reduction of wages is inevitable.

Wages Continue Low

During the last few months wages have slowly risen, but hardly sufficiently to insure the same real wage as before the war. In March the average weekly wage for skilled manual workers in the iron and steel branches was 39.51 marks, or well under $10; for unskilled 27.09 marks ($6.55). This is for "normal working hours," which are officially reported as having been in the metal industries of Hamburg and Cologne 54 hr. a week, and in North-West Germany, including the Ruhr, 57½ hr. a week. The average coal miner's weekly wage (skilled) has for some time past remained unchanged at 43.38 marks ($10.50) weekly; unskilled, 31.62 marks ($7.65).

Iron ore supply is plentiful. Large further orders have been given for Newfoundland ore and Swedish ore is booming. The Swedish Grängesberg syndicate reports having shipped in the first four months of this year over 2,300,000 tons, which is 50 per cent more than in the same period last year. These imports are to the disadvantage of French minette which, owing to the high railroad freight rates in Germany, is not able to compete.

Ruhr ironmasters regard this with a certain satisfaction, considering that it will bring pressure on France to come to terms in the international steel agreement question, and may ultimately influence a general reduction of German railroad rates. This reduction the Railroad Corporation has refused to grant, claiming the need for earning sufficient profits to pay interest on its Reparations bonds.

Price Changes in Both Directions

Conditions in the pig iron market have undergone no change. Scrap iron, after a short period of weakness, is again active and prices have risen. Latest prices are: steel scrap, 80 to 81 marks per metric ton ($19.36 to $19.60 per gross ton); solid scrap, 78 to 79 marks ($18.88 to $19.12); turnings for Martin (openhearth) furnaces, 64 to 65 marks ($15.49 to $15.73). The market for sheets, except finest qualities, has somewhat weakened. In general the rolling mills are doing well; but prices have no uniform tendency. During April bars rose from 130 marks to 132 to 135 marks per metric ton (1.40c. per lb. to 1.43 to 1.46c.); ex-works, and structural forms from 127 to 130 marks (1.37c. to 1.40c); but thick sheets (over 5 mm. or No. 6½ gage) dropped from 145 to 140 marks (1.57c. to 1.51c.); medium sheets (3 mm. or No. 11½ gage to 5 mm.) from 175 marks to 160 to 165 marks (1.89c. to 1.73 to 1.78c.), and thin sheets from 195 to 200 marks to 185 to 190 marks (2.11 to 2.16c. to 2 to 2.05c.). Sharp French and Belgian competition is reported in rails and sheets.

Conditions in the engineering and machinery branches are not homogeneous. The foreign credits recently obtained have tended to increase activity by enabling the producers to give credit and thereby to obtain orders which they otherwise would have lost. The locomotive branch continues depressed, the Bahnbedarfs-Gesellschaft in Darmstadt and Neuwied has obtained two French orders for railroad cars, and small orders for locomotives have been obtained from British India and South Africa; but practically no orders have been given by the native Railroads Corporation, and the finances of this new concern have turned out to be less satisfactory than was believed late last year.

Automobile Industry and Its Relation to American Exports

The automobile industry is booming, as a result almost exclusively of home orders. Efforts are being made to popularize the use of automobiles in the belief that something like American conditions may ultimately be attained. In Berlin a central association has been formed with this aim, which will organize local repair shops and benzine distribution centers. At present

Germans who cannot afford chauffeurs consider that they cannot afford automobiles.

An embittered conflict is proceeding between the automobile manufacturers' association and the traders' association, over the former's demand for higher import duties, to replace the protection at present enjoyed through the fact that automobiles are on the import prohibition list. The traders declare that the manufacturers cannot possibly meet the home demand. The manufacturers put their present annual capacity at 60,000 cars, and affirm that they can easily increase this to 100,000 cars, which is the maximum demand expected under present conditions.

The Automobile-Haendler-Verband, representing traders, publishes figures to show that not only are wages in the home motor industry much lower than in America, but that also German steel, aluminum and other materials of the qualities used in the motor branch are cheaper than American; and that, as American exporters (against whom the tariff demand is mainly directed) would have to pay for packing and freight, American competition ought not to be ruinous if German production methods were normally economical. The present high production cost of German cars, says the "Verband," is due to antiquated German technical methods and organization.

Duties demanded by the manufacturers would work out at between 121 and 194 per cent of the sale values of the cheaper kinds of American cars; and the more moderate duties proposed by the Government would work out at 133 per cent. This issue has considerable importance for the United States, because there are signs of a great increase in the German demand, and the provision of cheap, good cars, which are not made in Germany at all, would accelerate the increase. The number of cars in use in Germany last year was only 216,300 (including trucks), but the number in 1923 was only 152,068, and in 1914 only 57,300. The percentage increase has of late been considerably greater than in England.

FRENCH IRON AND STEEL

Output in March at Lower Daily Rate Than in February

PARIS, FRANCE, May 4.—Of 220 existing blast furnaces 136 were at work on April 1, as against 135 on March 1 (one more in the East and one more in Lorraine, but one less in the South-West); 37 were in working condition against 38 (one less in Lorraine, one less in the Center, one more in the South-West), 47 were either under repair or being constructed, as in the past month (one less in the East, one more in the Center).

Pig Iron.—The output of pig iron in March amounted to 688,871 tons, i. e., 22,220 tons daily average; as against 636,934 tons in February, the daily average having been nearly 23,000 tons. The output of cast iron amounted to 138,903 tons, as against 125,814 tons; and basic iron to 491,878 tons, as against 461,530 tons.

For the first quarter of 1925, the output of pig iron totaled 1,995,157 tons, as against 1,815,852 tons for the first quarter of 1924. Were the output of pig iron to maintain its present level throughout the year this output would reach nearly 8,000,000 tons.

Raw Steel.—The March production amounted to 607,071 tons, i. e., a daily average of 19,600 tons, as against 569,007 tons in February, i. e., 20,200 tons daily average. The March output includes 593,150 tons of ingots and 13,921 tons of castings; representing 410,592 tons of basic steel (385,114 tons in February) and 181,468 tons of open-hearth steel (168,875 tons in February).

For the first quarter of 1925, the output of raw steel amounts to 1,784,224 tons, as against 1,668,570 tons during the corresponding quarter of 1924. Were the output to remain at this level throughout the year, we would reach a total of about 7,200,000 tons.

Iron and Steel Output in Luxemburg During March

LUXEMBURG, May 4.—During March 35 blast furnaces were in action, including all 6 at work at Esch A; all 6 at Dudelange; 2 of the 3 at Dommeldange (A. R. B. E. D.); all 6 at Belval; Esch has stopped work (Terres-Rouges); 9 of the 10 at Differdange; Rumelange is off (Hadir); 4 of the 5 at Rodange, and 2 of the 3 at Steinfort.

Total output of pig iron amounted to 198,737 tons, including 195,327 tons basic iron and 3410 tons cast iron.

Total steel output in March amounted to 178,367 tons, including 174,789 tons basic steel, 3041 tons open-hearth steel and 537 tons electric steel.

Canadian Iron and Steel in April

The production of pig iron in Canada during April amounted to 60,065 gross tons, which marks a slight decrease from the 63,932 tons reported for the month of March. In March the entire output consisted of basic pig iron, but in April the output of basic iron dropped 17 per cent to 52,851 tons. The cumulative output for the four months ending with April was 181,805 tons, as compared with 285,155 tons for the corresponding period last year.

The production of steel ingots and castings in Canada for April amounted to 88,355 tons, or about 18 per cent below the output of 107,605 tons reported for March. The output was composed of 86,472 tons of steel ingots and 1883 tons of steel castings, all of the ingots and 10 per cent of the castings being intended for the further use of reporting firms. For the four months ending with April the cumulative production of ingots and castings was 260,307 tons, as compared with 311,386 tons for the same period last year.

Increased Machinery Exports to Dutch East Indies

Exports of machinery to the Dutch East Indies amounted to more than $1,500,000 in 1924, according to figures of the Department of Commerce. This is practically double the 1923 total of $800,000 and is five times the 1922 figure of $300,000. In contrast, German machinery shipments to the Dutch East Indies declined from 6874 metric tons in 1922 to 6259 tons in 1923 and to 2566 tons in 1924.

About 60 per cent of the 1924 exports of American machinery to that destination consisted in mining, oil-well and pumping machinery. One-third of the remainder was construction and conveying equipment. Much of the German machinery shipped to that market has been for the sugar industry and for the cleaning of grain. The sugar machinery dropped off completely, however, in 1924, as did also German exports of metal and wood-working machine tools.

Drop in British Output

LONDON, ENGLAND, May 16.—(*By Cable.*)—The pig iron production in April was 569,800 gross tons, compared with 607,900 tons in March. The April steel output was 597,600 tons or the smallest this year. Both are under the monthly average for 1924.

Comparative production figures for the British steel industry in gross tons per month are as follows:

	Pig Iron	Steel Ingots and Castings
1913, per month	855,000	639,000
1920, per month	669,500	755,600
1921, per month	217,600	202,100
1922, per month	408,300	486,000
1923, per month	619,800	707,400
1924, per month	609,900	685,100
January, 1925	569,400	605,100
February	534,100	646,400
March	607,900	684,700
April	569,800	597,600

BUSINESS READJUSTMENT NEARLY COMPLETED

Favorable Factors

(1) Production curtailed in industries producing to excess; imports reduced.
(2) "Real wages" of labor still high.
(3) Retail trade continues at a high level.
(4) Money easy.
(5) The pound sterling, definitely established on a gold basis, returns to par.
(6) A high level of activity obtains in the automobile and building industries.
(7) Prospective tax reduction and favorable attitude of Federal adminstration toward business.

Unfavorable Factors

(1) The commodity price trend is still downward.
(2) Steel Corporation's unfilled orders declined in April to a greater extent than in March.
(3) Business failures increasing.
(4) Employment and earnings of labor are decreasing.
(5) Bank debits declined sharply in April.
(6) Exports decline.
(7) Depression exists in textiles, coal, and copper.

The conclusion is that there will be a continuation of the general business recession for at least another month. The considerable number of favorable factors, however, indicates that the decline will be moderate and that stabilization will occur at a fair level considerably above the depression point.

BY DR. LEWIS H. HANEY AND BERNARD M. BROUDY
of the New York University Bureau of Business Research

Prices and Production Still Sag

COMMODITY prices continue to decline. The Bradstreet index on May 1 was 2.7 per cent below the April 1 position. A special six-commodity price index (maintained by the Bureau of Business Research) which is very sensitive in reflecting business conditions, declined by a similar percentage. In March a list of 106 commodities showed 43 declines against 16 advances, while during May there were 45 declines and only 14 advances. *During the last two weeks, however, prices have shown a firmer tendency.*

As long as prices decline an advance in the volume of business is improbable. Buyers hold off on a declining market, and profits are curtailed when goods bought yesterday have to be sold at a lower price today.

With the decline in prices, money rates have become easier and the basis of bank credit has gained in strength. The increase in reserves, however, and the decrease in deposits and circulation, which have taken place of late, reflect diminished business. It is an element of strength in the situation that the present moderate decline in business was preceded by no undue financial expansion, but began while the basis of credit was still unimpaired. This insures against any severe financial strain and indicates that conditions are favorable to an early recovery in business.

Clearly there is no occasion for alarm. Manufacturers and merchants need merely proceed with caution until equilibrium between production and sales is restored.

Readjustment Really Favorable Factor

AS shown in Fig. 1 there has come a general downswing in the business cycle. Railroad tonnage showed another decrease in April. While the number of cars loaded increased, the number of ton-miles handled has been decreasing. The average carload was 27.2 tons in February and only 26.1 tons in March. This reflects the current slackening in production.

After five months of continuous increase the volume of checks drawn (bank debits) fell sharply in April. The weekly average in April was 10.8 billion dollars against 11.7 billion dollars in March. This is the lowest average since last October, and after making due allowance for the usual

Fig. 1—Goods in Shipment and Money Transactions Decline Further

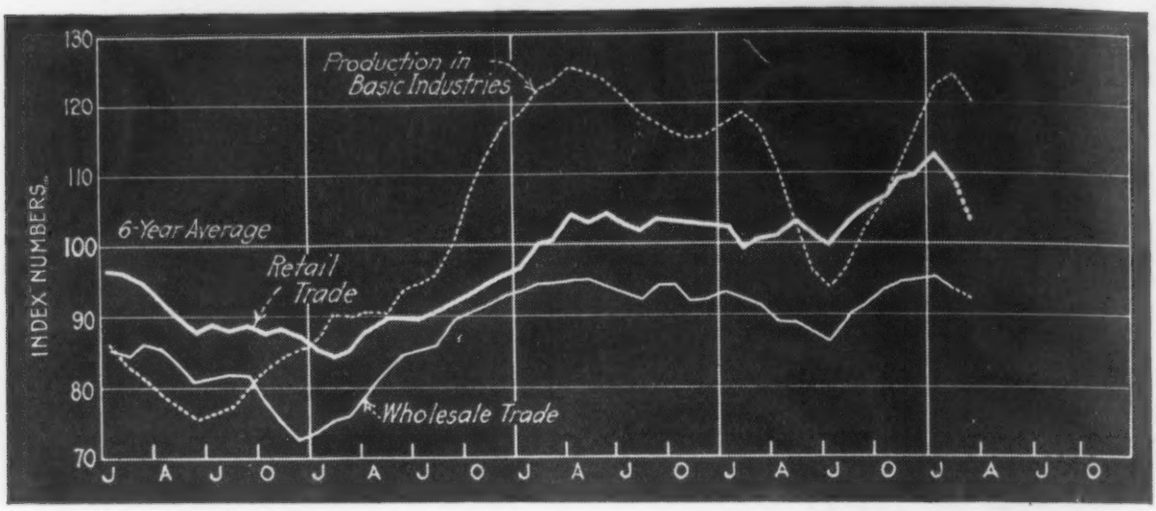


Fig. 2—Though Declining, Retail Trade Is Still at High Level

seasonal movement, the index of bank debits is nearly back to the level of November, 1924. This reflects the setback in trade and speculative activity.

It should be clearly recognized and frankly admitted that in general the trend of business has been downward since February—in spite of the present expansion in some lines such as automobile manufacturing. The best way to meet such a situation is not to ignore it and assume a false optimism, but neither is pessimism warranted. It may be fairly said that the readjustment of business promises to be effected without any drastic setback and that the current downswing will carry us but little below a normal level of stabilization. Hard work, careful planning, insistence on economy in production and distribution, and reasonable caution, will get results.

Retail Trade Volume Encouraging

IN Fig. 2 is given for the first time a graphical illustration of the trend of trade in the last few years, as prepared by this bureau. The retail trade curve includes department stores, grocery chains, mail order houses, and chains of 5 and 10 cent stores and drug stores.

At the present time the indexes of trade and of production in basic industries are tending downward.

The retail trade curve is above the six-year average and is higher than a year ago, which is all the more striking in that an allowance has been made for the normal growth or long time trend in retail trade.

Wholesale trade, however, is under the six-year average and is only about the same as a year ago.

Production in basic industries was clearly excessive and still stands far above the six-year average and is proportionally above retail and wholesale trade.

The graph justifies the conclusion that the rather large volume of retail trade is an element of strength in the existing situation. The fact, too, that retail trade is so much higher than wholesale trade also is a favorable indication, as it indicates that retailers have not been overbuying. But industrial production has gone ahead too fast in comparison with trade.

Steel Barometers Still Point Down

BOTH of the barometers of the steel trade moved downward in April (Fig. 3). As the steel trade is so fundamental, these barometers have value in forecasting the general trend of industry.

The price of heavy melting steel scrap is apparently at bottom levels, but the market trend has not yet clearly turned upward. The unfilled orders of the Steel Corporation decreased in April more than in March and, judging by past performance, it may be concluded that no upturn in the iron and steel industry is yet in sight. (This curve shows the amount of change in the unfilled orders and furnishes a very sensitive barometer.)

New Business Enterprises Show Increase

THE business birth rate and death rate as shown in Fig. 4 again give a mixed reading, fail-

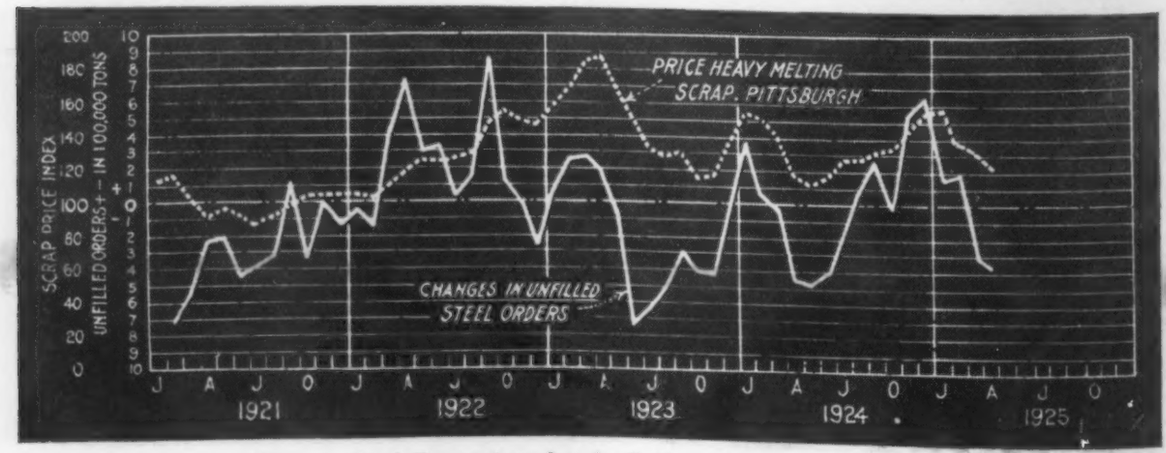


Fig. 3—Steel Barometers for April Showed Downward Trend

In This Issue

Business readjustment nearly completed.—Excess production reduced, retail sales high, money easy, Government attitude favorable to business prosperity. —Page 1507.

Where does the greatest opportunity for future profits lie?—In the application of engineering and scientific methods to problems of distribution.—Page 1481.

Should the small buyer pay a higher price than the large purchaser?—Steel trade faces difficult situation as need for orders, large or small, becomes urgent.—Page 1513.

Objections to President Coolidge's thrift appeal not based on sound economics or common sense.—Money saved is spent for permanently useful goods instead of perishables.—Page 1512.

Changes in freight rates still under fire.—Proposed reduction from Birmingham to Mississippi Valley points meets energetic opposition.—Page 1519.

Price does not depend entirely upon supply and demand.—Mental attitude of buyers and sellers toward market equally important factor.—Page 1513.

What is responsible for "flakes" in steel?—British scientists and steel men advance suggestions in regard to control of "flakes" and "hair-cracks."—Page 1490.

Recently developed methods for detection of strains in mild steels.—Results of special study by means of etching.—Page 1492.

Influence of high-temperature gases on iron.—With special reference to the formation of blowholes.—Page 1493.

What shall be done with zinc coated second sheets?—Shall they be scrapped, specially branded or sold to special customers who can use them to advantage? —Page 1517.

Shoemaking for 5,000,000 horses.—Keeps a dozen plants busy and requires about 100,000 tons of iron or steel annually.—Page 1477.

Average efficiency of office clerk is only 50 per cent.—Management executive says $3,000,000 a day could be saved if efficiency were increased to 75 per cent.—Page 1482.

Four reasons why men leave jobs.—And some valuable facts about the ages at which labor turnover is lowest.—Page 1483.

New plant now rolling charcoal iron.—Design and methods of continuous mill of Reading Iron Co. for bars and skelp.—Page 1486.

Why the British iron and steel industry is operating at a disadvantage today.—And how the president of the Iron and Steel Institute (Great Britain) would meet these conditions.—Page 1489.

Steel plate gutters 375 ft. long successfully welded into one piece.—Providing for expansion with the building.—Page 1497.

Alloys have not yet been proved superior for airplane construction.—Final outcome of tests may be use of steel for some parts and alloys for others.—Page 1498.

Europe has been a better customer for manufactured goods under Dawes Plan. —But what will happen when the influx of foreign credits comes to a standstill? Page 1499.

Mining iron ore north of the Arctic Circle.—How Swedish company operates rich deposits in ore mountains of Lapland.—Page 1500.

CONTENTS

May 21, 1925

Shoemaking for 5,000,000 Horses 1477
Keeps a Dozen Plants Busy—Gives Employment to 175,000 Blacksmiths —Requires About 100,000 Tons of Iron and Steel Annually

Distribution Forges to the Front 1481
Scientific Management Diverting Attention from Production to Merchandising—Psychology and Personnel Discussed by Taylor Society

New Plant Rolling Charcoal Iron 1486
Continuous Mill of the Reading Iron Co. for Bars and Skelp for Boiler Tubes—Knobbling Process Used

Strains, Gases and Hair-Cracks 1489
Iron and Steel Institute (Great Britain) Discusses Many Features of Steel Mill Practice

Gutters of Steel Plate 375 Ft. Long 1497
Fatigue of Metals in Airplane Parts 1498
Export Outlook Pictured Bright 1499
Swedish Iron Ore Mining 1500
European Markets Mostly Waiting 1504
Business Readjustment Nearly Completed 1507
George Smart's Great Service to Journalism 1515
Galvanized Second Sheets 1517

Warehouse Prices of Cold-Rolled Strips Cut $11 Per Ton 1480
Engineering Foundation Ten Years Old. 1485
Cleveland Punch & Shear Works 1488
Purchases Wells Corporation 1488
To Make Garvin Chucks at New Britain. 1488
Live Load Allowable in Design of Buildings 1495
Photographs Inside of Rifle Barrel 1496
Iron Content of Lake Superior Ore Well Maintained 1502
Carnegie Steel Lets First Unit for Its New "H" Beam Mill 1502
Cooperative Employee Insurance in Casting Plant 1503
Freight Rates in Alabama Regarded Out of Line 1503
Correspondence 1514
American Company Acquires Bosshardt Patents 1514
Federal Trade Commission Publicity ... 1516
To Make Garvin Machine Tools 1516
The "Master Brand" on Sheets 1516
German Export Activities 1519
Southern Freight Rates Attacked 1519
Wage Demand of Bar Iron Workers 1523
New York Export Market 1535
Tungsten Steel Scrap Ruling 1540
Western States Watch Merger 1540

MEETINGS

Philadelphia Foundrymen's Association .. 1479
Taylor Society 1481
Technical Program for Steel Treaters .. 1483
American Foundrymen's Association 1485
Brass and Aluminum Casting Discussed. 1485
Stove Manufacturers Plan Larger Organization 1485
Coming Meetings 1485
Pressed Metal Society Formed 1523

STATISTICAL

Record Building Volume in April 1494
Lake Iron Ore Shipments in April 1502
New High Records in American Exports in 1924 1502
Greater Employment in Metal Trades ... 1503
Canadian Iron and Steel in April 1506
Drop in British Pig Iron Output 1506
Production of Coke in 1924 1540

NEW EQUIPMENT

Power Operated Chuck 1480
Improved Pipe Threading and Cutting Machine 1484
Large Riveter for Boiler and Still Fabrication 1484
Revises Line of General Purpose Motors. 1488
Grinder with Speed Compensating Arrangement 1495
Welding Generator Set 1495
Sixty-eight Holes Tapped Simultaneously 1496
All Geared Sliding Head Gang Drill 1496
Light-Duty Tiering Machine with Worm Drive 1503

Iron and Steel Markets 1520
Comparison of Prices 1521
Non-Ferrous Metals 1535
Prices Finished Products 1536
Prices of Raw Materials, etc. ... 1537
New York Jobbers' Prices 1550
Editorial 1512
Railroad Equipment Buying .. 1533
Fabricated Steel Business 1534
Personal 1538
Obituary 1539
Machinery Markets 1542

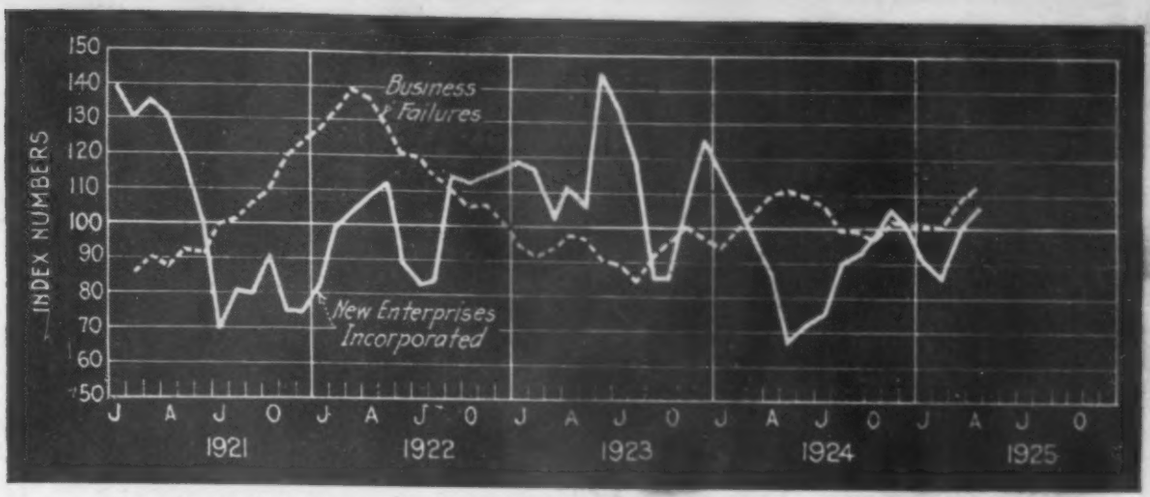


Fig. 4—New Enterprises Incorporated Show Upward Trend; Failures Increase

ures being up at the same time that new business enterprises increase. The number of new enterprises formed is a reflection of the easy money situation, while the falling price level is probably responsible for the increase in failures.

The three-month average of new business enterprises continued the recent advance and accordingly no change in the upward trend is yet shown in the curve. The actual number of new enterprises in the single month of April, however, decreased and the capitalization of new enterprises, after eliminating the merely seasonal variation, also showed a decrease for the month. This indicates that business men now have *a better realization of the moderate prospects for the next few months.*

Building Activity Holds Up Well

THE average rate on the best commercial paper advanced slightly in April as compared with March. The rate, however, was only about the same as at the low point in 1922.

Building activity showed some recovery in April (see Fig. 5), the gain being partly due to a heavy volume of construction of public works and utilities. The figure for April broke the record. Decreased activity is reported from New York State and northern New Jersey, and from the Southeast. Gains occurred in the other sections, notably in the Central West and in the Pittsburgh district.

The value of contemplated new work decreased from March.

The checking of the advance in money rates is favorable to construction activity, but it is very improbable that the record level of early 1924 will be reached this year. Probably April will prove to have been the peak for 1925 building.

The current high level of building activity and the relatively low level of interest rates are both helping to sustain iron and steel consumption and industrial activity.

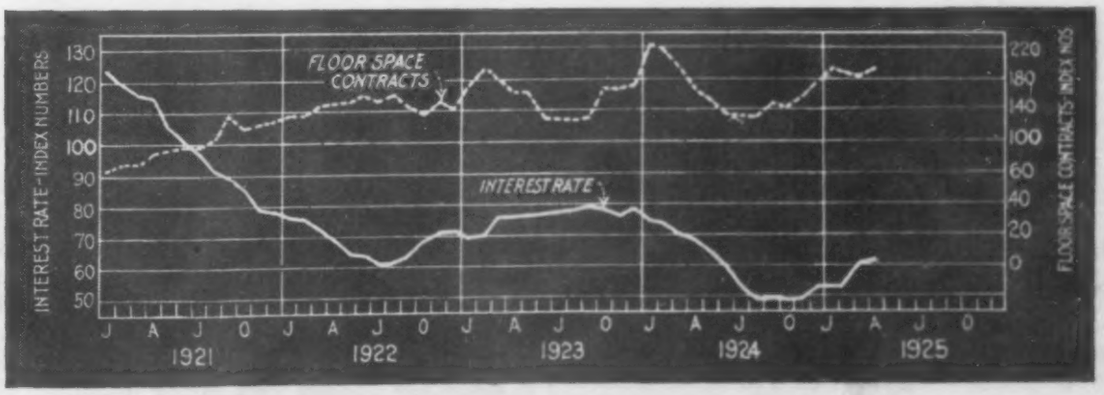


Fig. 5—Building Probably Reached Peak in April; Money Rates Drop

Good Business Not Produced by Word of Mouth

"Expressing a business opinion is a matter of more than passing importance," said H. I. Shepherd, vice-president Guardian Trust Co., Cleveland, in an address before the Taylor Society at Ann Arbor, Mich. "Unfortunately there are men, oftentimes in positions of importance, who feel called upon always to predict wonderful business just ahead . . . Good business is not produced by word of mouth. A buyer does not later favor or remember kindly the salesman who stocked him up with an inventory that the condition of the times does not demand. We must admit squarely the fact that reactions in business are a normal economic condition and have been with us since the seven years of plenty and the seven years of famine. We must learn not to come to our business conclusions in our periods of mental reactions, whether up or down.

"Business, at present, while spotted in places, is generally quiet. We are in what is often termed a buyer's market. There is no mystery about it. We might profitably apply the old Latin quotation 'in pace paratur' (in time of peace, prepare.) Adapt our expenditure to our period of smallest income—set our house in order—and be in a sound position for the reaction for the better. A man who advises this is no pessimist—he is not the enemy of the business man—he is wise counsel."

ESTABLISHED 1855

THE IRON AGE

EDITORS:

A. I. FINDLEY — WILLIAM W. MACON — GEORGE SMART

C. S. BAUR, *General Advertising Manager*

Member of the Audit Bureau of Circulations and of Associated Business Papers, Inc.

Published every Thursday by the IRON AGE PUBLISHING CO., 239 West 39th Street, New York

F. J. Frank, *President* — PRINTED IN U. S. A. — George H. Griffiths, *Secretary*

Owned by the United Publishers Corporation, 239 West 39th Street, New York. Charles G. Phillips, *Pres.* A. C. Pearson, *Vice-Pres.* F. J. Frank, *Treas.* H. J. Redfield, *Secy.*

BRANCH OFFICES—Chicago: Otis Building. Pittsburgh: Park Building. Boston: 425 Park Square Building. Philadelphia: 1402 Widener Building. Cleveland: Guardian Building. Detroit: 7338 Woodward Ave. Cincinnati: First National Bank Bldg. Buffalo: 833 Ellicott Square. Washington: 536 Investment Building. San Francisco: 320 Market St. London, Eng.: 11 Haymarket S.W.1.

Subscription Price: United States and Possessions, Mexico, Cuba, $6.00; Canada, $8.50; Foreign, $12.00 per year. Single copy 25 cents.

Entered as second-class matter, June 18, 1879, at the Post Office at New York, New York, under the Act of March 3, 1879.

George Smart

WITH a sense of loss that words cannot convey the members of THE IRON AGE editorial staff have gone about their work for the present issue. The unoccupied desk of George Smart is the outward sign of a change that will long be felt in the unnumbered ways in which the passing of so winning a personality must continue to assert itself. Newspaper work develops an unusual comradeship among those who have borne together its stress and exactions, and in an uncommon way George Smart has impressed himself upon the men who have worked with him for eight years and more.

What is said of him on another page gives some measure of his achievement in terms of biography. But what his co-workers of THE IRON AGE most dwell upon today may well be called his genius for friendship. To none could the title Friend of Man be applied with more fitness.

His contribution to iron trade journalism will find larger appreciation with the passing of time, for his interest and encouragement have meant much to the younger men in that field who are coming into increasing editorial responsibilities under the influence of his high standards. In the choice of his activities he put the highest appraisals upon the things most worth while, and into his everyday work carried the same integrity and high sense of his responsibilities that marked every relation of his life.

To their beloved comrade who has "put out to sea" his associates, standing on this narrow shore of time, wave an affectionate hail and farewell.

Thrift and Business Activity

THERE can be little patience with the complaints of those who charge President Coolidge's thrift doctrine with injuring business. That there has been much lamenting about the President's attitude on this subject is indicated by a résumé in the current issue of the *Literary Digest*.

Those who complain are, so far as can be seen, only makers or retailers of perishable goods, such as clothing. For the sake of argument it may be granted that claims that such business has been injured are correct, but it does not follow that the further assertion is correct, that the business of the country will suffer.

The important business of the country is that which makes for prosperity, a prosperity made lasting by men becoming better off. This business will be injured temporarily if men listen to these complaints and get the idea that harm is being done to the general public.

There is a kinship between this kind of talk and the old notion that breaking windows is good for business because it makes trade for the glaziers. Anyone is better off who practices thrift by avoiding waste, and it is waste to discard a hat or a suit of clothes when it will still do. President Coolidge is specifically charged with having influenced men to refrain from such waste. If the individual becomes better off by avoiding waste the same is true of the entire public.

In the individual case, if the housewife takes good care of a carpet so a new one need not be bought, and invests the money instead in additional electric wiring, the household is the better off, for it has added a lasting convenience. The sum total of business of the country has not been injured, for the money has been spent just the same.

If as a people we make our perishables last longer, and thus spend less of our income on perishables, we shall simply spend so much more on the permanent things, on new public conveniences, transportation facilities, factories and the like.

In fact, it is virtually impossible that in the

long run incomes should not be spent. Conceivably one may convert his income into currency and so sequester the currency that later it will not be spent by a robber; but that is the exception that tests the rule. Money saved, whether deposited in savings accounts, invested in bonds or stocks, paid on mortgage, or otherwise properly employed, swells the capital of the country and encourages the construction of useful facilities. The use of these facilities makes the country better off, i.e., more prosperous.

All this is perfectly obvious, of course; hence the public ought not to listen to the complaints of those who say their business is being injured, and slip in the inference that if they are injured everybody is hurt. Unfortunately the general public is not made up of economists and there is a disposition to sympathize with those who complain. Every one has the theory that general business needs to be active and that money ought to circulate freely, but each has his own reservation that it really does not count unless the money passes at least once through his own hands.

Quantity Differentials on Steel

THERE is a growing disposition in the steel trade to charge the small buyer a higher price than the large buyer. Theoretically the mills have always this idea in mind, but in recent years competition has been so keen that less than carloads of some products have been easily obtainable at the same prices charged for a carload or more. Recently some of the mills put into effect an advance of $2 a ton on plates, shapes and bars. It was later explained that this advance was not expected to apply on the larger orders—a relative term in these days of hand-to-mouth buying—but positively would be enforced on small lots, particularly less than carloads.

Quantity differentials have long obtained on some classes of steel products, but have been hard to apply on others. Pipe mills have little or no difficulty in getting an extra for quantities under a carload, and on tin plate there are extras which are applied to the smaller quantities. For example, a purchase of 25 to 50 boxes takes one extra and of less than 25 boxes a higher extra. In the opinion of steel manufacturers they are entitled to similar extras on other products, but they have not been able to enforce them, and as a matter of fact there are no standard extras in effect on plates, shapes and bars.

In a market condition such as exists today, it frequently is possible for the buyer of a carload to obtain just as favorable a price as the buyer of a thousand tons. Of course certain types of large buyers, such as the car companies and the oil companies, have nearly always had special prices, in the way that large implement manufacturers were favored for many years on their bar contracts. Sometimes these prices have been so very special that they could not be regarded as "market prices" in the sense in which that term is generally understood. One of the most difficult feats of the steel salesmen lately, however, has been to convince the buyer of a small lot that he is not entitled to the lowest price which such buyer has heard. It is the duty of every purchasing agent to buy as cheaply as he can, all other things being taken into account, and many interesting questions are likely to confront the steel mills which try to introduce quantity differentials to which the trade has not become educated.

Our Steel in Latin America

EXPORTS of iron and steel from the United States to Latin American countries in 1924 were more than twice as great as those from Great Britain, despite the fact that total iron and steel exports of Great Britain were more than twice those of the United States. Except for Argentina, where England supplied 211,936 tons to our 55,388 tons—this latter being largely sheets for combating the locust plague—the United States had a heavy preponderance. Totals to Latin America were 277,010 tons from Great Britain and 593,892 tons from the United States. This appears to indicate that the United States is in position to compete actively in those markets and to hold a fair share of the trade. The element of contiguity, so important with regard to Canada, which bought 550,593 tons from us and only 102,140 tons from the mother country, does not apply in South America, for Brazil and Argentina are scarcely farther from Liverpool than from New York.

Price Pendulum Swings Faster

THE price swings of any commodity bear no exact mathematical relation to supply and demand, since it is virtually impossible to determine either supply or demand accurately at any given time. Only in rare instances can the actual amount of any commodity available for distribution be determined; also, accurate advance knowledge of immediate demand is practically non-existent. Thus the price depends not so much upon the actual ratio between goods available and goods wanted as upon the current estimate of market conditions made by buyers and sellers.

The significance of these considerations is often overlooked in the resistance of men's minds to change. When times are "good," it is human nature to continue to think that nothing can change this happy state. The history of boom times gives ample evidence on this score. When the country is less prosperous, though all eyes may be straining for signs of improvement, few men are willing to believe the basic economic signals which herald better business—until the upward march is well under way. The tendency of the average speculator to "hold on too long" is well recognized.

To an extent this factor operates in every market. In the days when there was no information regarding production, stocks, sales and other vital factors, business men overplayed their hands regularly and with results that were disastrous. Gradually buyers and sellers have learned to accept statistical help in the estimation of values and in consequence the swings of the price pendulum have become shorter. And since facts overcome mental resistance more quickly than hit-or-miss opinions, price fluctuations have also become more rapid.

There is still a considerable margin between the public opinion in regard to a specific market and the actual status of that market. Statistics are far from complete, and use of the now available data is much too infrequent. But for the man who will take the trouble to use the information which does affect his business, there is this to say: He is not likely to be selling at too low a level when basic conditions call for a reversal of the price trend, nor will he be caught uncovered as to future requirements when prices make the turn.

Service Pin Surprises

METHODS of building up esprit de corps in the shop sometimes develop drawbacks that never occurred to their originators. The giving of service pins to employees to indicate their years of service has come to be rather common, and generally the practice has met with favor among the workers. Experience in certain cases has shown, however, that where women are involved the results may not be altogether pleasant. Some men, too, dislike to wear pins or buttons. Especially is there protest when the list of long-service employees is published in the daily press.

The reason, of course, is that length of service is a measure of the age of the individual. A woman who is awarded a 10-year or a 15 or 20-year pin or button is easily placed as to the number of her years. To have the self-evident deduction spread about the plant is bad enough, it is complained; but when the information goes to the community at large, the consequences may verge on the tragic. Cases are known where women, hearing that service pins were to be dealt out, left their jobs, breaking the continuous service which the idea is intended to perpetuate. Not a few men are as sensitive as women concerning their ages. For the same reason that a woman, especially an unmarried woman, does not boast that she has passed, say, her thirtieth birthday, many men are not anxious to broadcast the fact that they have reached the years where younger folk brand them old. The compromise suggested is to give a pin to every employee who has served a given time, say five years, and let that suffice, without indicating the exact number of years, excepting in case of employees of very long service.

CORRESPONDENCE

Rail Steel Reinforcing Bars and Building Codes

To the Editor: Building codes in general, through a process of growth, have exceeded considerably the generally accepted limits of police power, which is, of course subject to interpretation by the courts. Police power protects the people against harmful acts of individuals in so far as safety, health, morals and the like are concerned. Regulations that deal merely with economies of construction, with benefits to the house owner or occupant, or with benefits to manufacturers or laborers, are not properly written into the building codes.

If, for instance, a building can be erected by the use of rail steel reinforcing bars and prove entirely safe, that is no reason to specify that rail steel reinforcing bars should be used. On the other hand, if it has been proved through long experience in scientific tests that there is no question of public safety in the use of such bars, a clause prohibiting their use does not properly lie in a building code.

Increased durability may confer a benefit, but clauses insuring this quality are not matters justifying the invoking of police power. In other words, good building practice should not be confused with requirements necessary for protection from fire or accident. Engineers and architects deal with building codes almost entirely from the standpoint of economy and good practice.

A building code is not a handbook of good construction. It should not restrict the freedom of the buyer or builder in his choice of a type of structure suitable for his purpose. A code should not be a medium for the favoring of special interests nor for the expression of prejudice.

Through confusion of rail steel reinforcing bars with the former so-called re-rolled material, clauses have crept into building codes stating that no re-rolled material shall be used. The re-rolled material referred to was in many cases a former product of local mills in which various scrap material, such as wire spokes, wrought iron bars and miscellaneous local scrap was bound together and then heated and rolled into an inferior and variable product for unimportant uses.

Rail steel reinforcing bars are an entirely different product. They are really billet bars, because the steel rail from which they are rolled is a billet of high quality.

The Rail Steel Products Association, Chicago, issues a challenge to any one who can cite a single case of accident arising during the erection of a building or a failure after erection due to rail steel reinforcing bars. The record is one of increasing success and extension of their use in the more important structures. Recently the following structures designed and built or being built by responsible and careful engineers have embodied rail steel reinforcing bars:

> Building for Sears, Roebuck & Co. at Kansas City, consisting of 1,500,000 sq. ft. of floor space; the Produce Market; the Hibbard, Spencer, Bartlett warehouse; the addition to the Furniture Mart; the South Shore Hotel, all in Chicago; the 100,000,000-gal. filtration plant for the District of Columbia being built by United States Army engineers and the 32,000,000-gal. reservoir for the City of Cincinnati.

In view of this evidence, it would appear that cities writing clauses in their building codes excluding rail steel reinforcing bars are subjecting their citizens to a limited market, a lack of competition and advanced prices for materials, without any corresponding benefit.

W. J. KIBLER,
Rail Steel Products Association.

Chicago, May 2.

American Company Acquires Bosshardt Steel Furnace Patents

American rights under the Bosshardt open-hearth steel furnace patents, recently acquired by Ellis Miller and associates, have now been vested in the American Bosshardt Furnace Corporation, with office at 347 Madison Avenue, New York. The president of the corporation is Andrew M. Hunt, Peyton & Hunt, New York. Edgar Baruc, Bernhard, Schiffer & Co., is treasurer. The technical direction will be in the hands of Walter J. Willis, recently in charge of the steel and malleable iron production of the Gould Coupler Works, Depew, N. Y., and now vice-president of the American Bosshardt Furnace Corporation.

The furnaces are operated with ordinary bituminous coal gasified in small generating chambers forming part of the furnace. Natural chimney draft is employed. The life of the furnace has been found to extend to upward of 350 heats before the usual rebuilding.

A LIFE THAT COUNTED

George Smart's Great Service to Journalism and to Community Betterment

GEORGE SMART, who has been one of the directing editors of THE IRON AGE for more than eight years, died at his home in Forest Hills Gardens, Long Island, on Saturday afternoon, May 16, after an illness of but a week. To his associates the tidings of Saturday morning that his malady had taken a turn leaving little hope of recovery were scarcely less of a shock than came to other friends who found in the obituary column of the Sunday newspapers the first notification that he was ill.

GEORGE SMART

Mr. Smart came to THE IRON AGE from Cleveland in February, 1917, after a connection of 15 years with the *Iron Trade Review*, for three years as associate editor and for 12 years as editor. He followed George W. Cope on THE IRON AGE, having charge of the news and market work of the field and home office staff. He had had a varied and valuable experience on daily newspapers before entering industrial journalism in 1902 at Cleveland, and he brought to his work in this latter field an unusual equipment of news sense and ability to appraise news values.

He was born in Chillicothe, Ohio, on Nov. 11, 1863, and went to school there. His college course was taken at Ohio State University at Columbus, as a member of the class of 1886. That he was to find his career in journalism was foretold by the success of his editorial conduct of the college *Lantern*. Leaving school, he took up reportorial work on the Columbus papers and for a year was legislative correspondent of the Cincinnati *Enquirer* at the Ohio capital. Later he served for eight years on the staff of the Cleveland *Plain Dealer* as reporter, editorial writer and Washington correspondent. He was one of the founders of the Columbus *Citizen* in 1899 and for three years was its editor.

In all these activities of a busy newspaper life Mr. Smart recognized in an uncommon way the claims of educational, civic and fraternal interests. For years he was one of the best known and best regarded members of Phi Kappa Psi, his college fraternity, and served as its national president. In recent years he has been chairman of its Student Aid Endowment Fund. The alumni of his college also honored his deep interest in young men, the Ohio State University Association making him its president in 1915. At Cleveland he was a member of the industrial committee of the Chamber of Commerce and in 1916 was chairman of its armor plate plant committee. This Cleveland committee, instead of bidding for the proposed Government works, as did scores of cities, condemned the Daniels plan that would have meant the wrecking of three costly private plants.

In coming to New York Mr. Smart did not lose, as have so many Western men in migrating eastward, his interest in the life of his community. At Forest Hills Gardens, as at Cleveland, he participated in every movement for civic betterment. He served as president of the Forest Hills Community Council, and at the time of his death was president of the Men's Club of the town.

As has been indicated above, Mr. Smart's part in the weekly composite of THE IRON AGE had most to do with its news and market pages. Under his direction these features have been strengthened and the service extended and improved. In his editorial writing he showed a marked preference for labor developments as subjects of comment. The human side of industry most appealed to him. Of the betterment of industrial relations he took no hopeless view, and saw promise in employee representation and in every other method of emphasizing the essential partnership of capital and workers. His articles on the great steel strike of 1919 were notable for exposing the radicalism of Foster and the union leader's purpose to bore from within.

In his comments on iron market conditions Mr. Smart showed full appreciation of the responsibilities of market writers and of their duty to report conditions as they find them, thus carrying on the IRON AGE tradition of impartiality and freedom from any bias in favor of buying or selling interests.

Mr. Smart was chairman of the Editorial Conference of the New York Business Publishers' Association in 1923-24. For the past two years he had been a member of the executive committee of the National Conference of Business Paper Editors. In a recent paper before the latter organization he discussed the lines of training which will best fit young men for a career in business and technical journalism.

In 1901 at Columbus Mr. Smart was married to Lucy Allen, of the class of 1897, Ohio State University. From their home life have radiated many helpful influences in behalf of the church, college, fraternity and community. Their daughter, Helen, was graduated at Wellesley in 1924 and their son, Charles Allen, is a junior at Harvard University.

A private funeral was held at the family residence on Monday, May 18. On Sunday, May 24, at 4 p. m., there will be a memorial service in the Church of the Gardens at Forest Hills, at which addresses will be made by representatives of the church and community, of Ohio State University, the Phi Kappa Psi Fraternity and the business press of New York.

In Appreciation

Charles J. Stark, editor of the *Iron Trade Review*, whom Mr. Smart inducted into iron trade journalism at Cleveland, pays this tribute to his friend:

"George Smart stood for personality and good faith in journalism. As an editor he constantly applied to his responsibilities the same code of unimpeachable honor, complete justice and ready helpfulness which marked every undertaking of his life and which symbolized his character. No man had higher ideals or was more faithful in practising them in his daily affairs. The principles he pursued have gone far toward lifting iron and steel market reporting to its present standard

of reliability and wide acceptance. His keen interest in the right solution of labor problems in industry was effective in promoting present day advancement. The business paper field as a whole is better that he lived. The impress of his fine character through his many years of allegiance and its inspiration for better things are fixed in the permanent background of the *Iron Trade Review* and will endure."

Bertram S. Stephenson, sales manager at Detroit for the M. A. Hanna Co., was a member of the *Iron Trade Review* editorial staff when George Smart was editor. Writing to THE IRON AGE in appreciation of Mr. Smart he says:

"To a rare degree George Smart combined those qualities which we are accustomed to idealize. Courage, industry, loyalty and devotion to his family, his church, his community and his profession—these things were in a manner taken for granted by those who knew him well as belonging naturally in the makeup of the man. With him, in whatever direction his work happened to lie, high ideals were a passion. Many years ago, when newspaper ethics still left much to be desired, he guided a struggling Western daily through its early trials and won for it brilliant success on the policy that a clean, honest newspaper could and must succeed. Somehow he always retained a youthful heart and he never lost enthusiasm. Of simple tastes and quiet habits, he regarded life from a sane viewpoint and with a singularly true appreciation of its values. The iron and steel industry owes far more than it realizes to this master journalist, who has noted and commented on its progress and problems these many years."

FEDERAL TRADE PUBLICITY

Explanation of New Ruling and Answers to Criticism of Minority

WASHINGTON, May 18.—A counter-attack on criticisms of the minority group in the Federal Trade Commission was made today by Commissioner W. E. Humphrey in behalf of the majority members, who have put through the changes in rules as to publicity and procedure involving cases against business firms. Commissioner Humphrey's memorandum is intended to answer the charges made a few days ago by Commissioner John F. Nugent, which were concurred in by former Chairman Huston Thompson. Commissioners Nugent and Thompson, both appointees of former President Wilson, comprise the minority group.

Commissioner Humphrey declares that the only protest so far against the new rules has been from those "who preach the doctrine that there is no honesty in the conduct of the business of this country. The principal objection that Commissioner Nugent appears to have, as shown by his memorandum, is that under the new rules the commission wishes to stipulate with crookedness and fraud and dishonesty." He claims that there should be no stipulation in such cases. The majority emphatically agrees with Commissioner Nugent upon this, and for that reason the commission, by the votes of Commissioners Van Fleet, Hunt and Humphrey, adopted a recent rule, as follows:

> But when the very business itself of the proposed respondent is fraudulent it may well be considered by the commission that the protection of the public demands that the regular procedure by complaint and order shall prevail. Indeed, there are some cases where that is the only course which would be of any value at all. As for instance, the so-called Blue Sky cases and all such where the business itself is inherently fraudulent, or where a business of a legitimate nature is conducted in such a fraudulent manner that the commission is warranted in the belief that no agreement made with the proposed respondent will be kept by him.

"The other change to which Commissioner Nugent most objects, quoting his own language, is:

> I am unalterably opposed to that part of the rule which provides that no publicity to the settlement of any matter by stipulation, before complaint is issued, shall be made by the commission.

"But this is not a change. It has always been the policy of the commission not to give out publicity when an application for a complaint is dismissed. The only time that this has ever been done in the history of the commission, so far as I have been able to ascertain, was in the recent case of the Kennecott Copper Co., where a member of the commission is said to have given out a statement for publication; this statement was not authorized by the commission.

"We feel constrained to make this public statement because the objections of Commissioner Nugent may be summed up in the statement that he was unaware of one of the rules, which is in exact harmony with his ideas, and which the majority adopted; and because, in the other cases to which he chiefly objects, the rules have not been changed.

"It is a source of satisfaction to the majority that Commissioner Nugent does not object to the most important change in relation to publicity; that of giving out a statement by the commission when the case is finally disposed of, instead of giving it out when the complaint is filed. It is also a great relief to the majority to know that Commissioner Nugent does not believe with Commissioner Thompson that the recent change has thereby deprived the minority of the rights guaranteed them under the Constitution of the United States."

To Make Garvin Machine Tools

John B. Stevens, New Haven, Conn., who, with his associates, J. Goldsmith and R. Frankel, was connected with the Garvin Machine Co., will manufacture the Garvin screw machine line, making all principal machines and parts, including the Garvin stop and open head mechanism. Mr. Stevens will also make Garvin grinding machines and is already well under way on 4, 5 and 6-in. milling machine vises. The line also will include three- and four-spindle multiple spindle index centers, single acting air devices and the Stevens duplex drill with ball bearing spindles. Mr. Stevens is agent for the Frew Machine Co., which is making the Garvin line of cam cutting machinery and heavy duty hand millers. He will act as manufacturers' agent for air devices and for all metal-working requirements. Mr. Goldsmith and Mr. Frankel will have charge of a New York office soon to be established. Mr. Stevens has been connected with designing, manufacturing and selling machine tools for some 30 years.

The "Master Brand" on Sheets

Modification should be made of a statement in the article on the "master brand" of the Sheet Steel Trade Extension Committee, published in THE IRON AGE, May 7, page 1342, to the effect that absence of this stenciling from sheets made by companies participating in the movement automatically identifies the sheets as "seconds" or "wasters." There are some companies which will not immediately use the brand and of course the product of such companies cannot be regarded as of inferior quality because the brand is not used. It is explained that the "master brand" stenciling will identify the sheets as of prime quality and the manufacturer as a participant in Trade Extension activities.

Domestic sales of oak leather belting, reported by the Leather Belting Exchange for April, show a total of 380,443 lb., valued at $663,493, or an average of $1.74 per lb. This is considerably less than the March total of 429,404 lb., valued at $728,699, or an average of $1.70, but is above the amount for April, 1924, which was 372,428 lb., valued at $643,929, or an average of $1.73 per lb.

Galvanized Second Sheets

Drastic Measures Proposed to Prevent Flooding of Market with Product Sold as Primes—Metal Branch of National Hardware Association Suggests Several Courses

THE sheet steel industry is confronted with a very serious problem because of the large quantities of seconds in galvanized sheets that are flooding the market, some of which are sold by dealers as prime sheets to manufacturers who should use only the prime grade in their product. This is resulting in a serious damage to the galvanized sheet industry.

Many remedies to correct this situation were brought out at the fourteenth annual meeting of the Metal Branch of the National Hardware Association held at the Hotel Cleveland, Cleveland, May 15 and 16, which was well attended by representatives of leading sheet and tin plate manufacturers and by jobbers.

Another subject that led to considerable discussion related to the use of No. 29 gage sheets for double lock roll roofing and for eaves trough and conductor pipe. The manufacturers and distributors expressed themselves very strongly in favor of eliminating sheets lighter than 28 gage for these purposes. It was pointed out that the difference in cost in the two grades amounts to very little and the percentage of increase for No. 28 gage is only about one half of the percentage of the increase in weight.

Price Stability Necessary

THE meeting opened with a brief address by Chairman W. H. Donlevy, Carter, Donlevy & Co., Philadelphia, who spoke of the present situation in the sheet steel industry and declared that the stability of prices is necessary to win back the confidence of buyers. He mentioned the sheet steel trade extension campaign as one of the important matters that is before the trade. Vital problems that confront the industry today, he said, include the high cost of doing business, narrow profits and long credits.

John A. Townley, president of the National Hardware Association in brief remarks referred to the trade extension campaign and urged the importance of handling the advertising in an efficient manner.

20 Per Cent Overproduction

The business situation was discussed by C. J. Stark, vice-president, Penton Publishing Co., Cleveland. He declared that all the factors of real prosperity exist at the present time except a too narrow margin of profit and that the country is in a condition of near prosperity except in the balance sheet. He pointed out that the country is going through a process of economic readjustment which has been nearly completed.

THE sheet steel outlook for the remainder of the year was discussed by several representatives of the leading sheet mills. While none seemed overly optimistic, several expressed their belief that there would be an improvement in the fall. G. F. Ahlbrandt, American Rolling Mill Co., Middletown, Ohio, said that the present sheet capacity of the country is 5,000,000 tons a year and with the normal demand the country will not consume more than 75 to 80 per cent of the total capacity. Consequently the industry has considerable slack to take up. For the next two or three years there will be 20 per cent over-capacity to consider.

F. M. Fuller, American Sheet & Tin Plate Co., presented a slightly different estimate of the present situation. He said that mills should be making a little money but that it is impossible when they are operating at 90 per cent of capacity and the demand is only for 60 per cent of capacity.

L. D. Mercer, United Alloy Steel Corporation, Canton, Ohio, declared that the outlook now is very gloomy but that sane judgment will prevail sooner or later. Conditions seem to be fine but the industry is sick. However, it will recover and the mills will make a fair return on their investment before long, in his opinion.

W. C. Carroll, Inland Steel Co., said that the situation from a standpoint of price had gotten bad so rapidly that it must now be at its worst and if manufacturers use good judgment, there will be an improvement shortly.

In the opinion of E. T. Sproull, Trumbull Steel Co., Warren, Ohio, the problem of today is to take care of over-production and to get prices up or to reduce the cost of production. He was not optimistic in regard to the possibility of reducing manufacturing costs and believed the situation will get worse unless something is done to correct it.

Second Sheets Real Problem

THE discussion of the seconds and wasters was started by M. C. Summers, Thomas Sheet Steel Co., Niles, Ohio. He declared that the industry has reached a point where something must be done with seconds. He suggested stenciling seconds or scrapping them. He believed stenciling would protect the ultimate consumer. About 55 per cent of the seconds reach the consumer as prime sheets. These are often used where only prime sheets should be employed. Much damage is done, particularly to the roofing industry, by the use of seconds. Frequently sheet steel roofing has not

What Shall Be Done with Galvanized Seconds?

TWO weeks ago the members of the National Association of Sheet and Tin Plate Manufacturers, assembled in annual convention, unanimously voted to brand all galvanized seconds as such, in order to avoid such confusion and disturbance as that caused by the recent appearance of unbranded seconds in competition with first grade sheets. Last week the members of the Metal Branch of the National Hardware Association took up the same matter at their annual convention. Some of the distributors apparently did not think that the manufacturers' action was sufficient to put a stop to the practice of selling seconds as prime sheets. Some of the suggestions made for disposing of seconds were the scrapping of all such sheets, compelling customers to take 10 per cent seconds and scrapping the balance, marketing direct from maker to user, eliminating the distributor, selling only to consumers who can use seconds without detriment, and the formation of an exclusive selling agency to dispose of all seconds.

stood up and this is leading to a substitution of composition roofing.

E. T. Sproull stated that a survey showed that 3 to 9 per cent of sheets are seconds and that the percentage should not be over 5 per cent with good mill operation. He believed that second sheets should be stenciled three times or more so that they could not reach the consumer as prime sheets. There is a legitimate field for seconds, he said.

L. D. Brueckel, Weirton Steel Co., Weirton, W. Va., declared there is a legitimate field for tin plate seconds and if the same attention is given to galvanized sheet seconds the problem would be solved. If it were found where the seconds go, the solution of the problem would be settled.

L. D. Mercer offered as a solution that buyers be compelled to take up to 5 per cent in seconds.

W. C. Carroll stated that approximately 25 per cent of seconds go to manufacturers who can use them. Of the remainder one half go to the ultimate consumer at cut prices with the inference that they are as good as prime sheets. This has an effect on the price structure. He believed the best plan would be to let the first 25 per cent go to their regular sources as at present and keep the remainder off the market by scrapping them.

Distributors Don't Want Them

THE subject was discussed from the standpoint of the distributor by J. George Fuchs, Bruce & Cook, New York. He declared that galvanized seconds are beginning to make heavy inroads into the steel market, so much that of late the ordinary user is buying more and more seconds. It is a question where they come from but it did not seem to him that with up-to-date mill practice there should be any increase in the quantity of seconds. Some of these are fine stock and it is hard to tell the difference between them and primes. Some users get a good lot of prime sheets and the next lot is poor, causing them to suspect they are being sold seconds for primes. This suspicion is due to a very few unscrupulous dealers but as a result reflections are cast on all. Both seconds and No. 2 primes can be used to advantage for some purposes but unfortunately the New York market has been flooded with these sheets so that they have become a menace to the market, especially when they are offered as good as prime sheets and sheets that can be sold as prime.

He suggested that mills stop the sale of seconds to distributors and market them to users direct. In that way they could exercise a better control and could see that seconds do not get in the hands of those who should use prime sheets. As long as the manufacturers allow seconds to be shipped in the New York market for distribution by jobbers, there will be no relief for those who are trying to sell prime sheets at prime sheet prices. Galvanized sheets have been condemned recently because they do not last owing to defective sheets and should this practice continue a year or two, he believes the standard of galvanized sheets will fall to the extent that substitutes will be used where possible.

Mr. Fuchs suggested the following remedies: scrap the galvanized seconds; sell primes and request buyers to take up to 10 per cent of the seconds arising and scrap the remainder; stencil seconds with the word "second" on each sheet; sell galvanized seconds to manufacturers of articles in which the quality of the sheets does not play an important role; form a consolidated selling agency for the disposal of galvanized seconds and sell these only to manufacturers, the agency to scrap those that cannot be sold.

Specification Buying Overdone

THE tendency to purchase sheets and tin plate according to specifications was discussed by H. E. Duff, American Sheet & Tin Plate Co. He said that specifications should be avoided as much as possible and that too many specifications are drawn by people not familiar with the subject and include requirements that it is physically impossible to meet. If specifications seemed necessary, a manufacturing expert should be called in for consultation. He pointed out that ordering material according to specifications may result in larger production costs and increased cost to the consumers. Some ask for material within closer limits than mills can roll.

Mr. Donlevy remarked that the distributors have the same problem as the manufacturer in regard to material ordered according to specifications. W. C. Carroll said that some buyers try to confine sheet mills to tolerances that would apply to strip mill practices.

No. 29 Gage to be Eliminated

THE committee earlier in the day took up appeals for additions to the schedule and one jobber had suggested adding 81 items to the sheet schedule. The committee wanted to give simplification a fair trial and Mr. Carroll announced at its meeting it made two changes. The first was to put 27 gage galvanized sheets back into the schedule because of the demand from cornice manufacturers. The second addition to the schedule was double cross lock roll roofing in 29 gage.

L. D. Brueckel, chairman, reporting for the tin plate simplification board of review, said that 12 and 35 lb. coatings had been eliminated and a revision had been made in the base weight. These changes are now in force and he believed that they are being adhered to and he recommended that further simplification be taken up at the October meeting. He said that various manufacturers were in favor of confining tin plate to four grades and it was decided to get the views of the members before the October meeting on eliminating all but four grades.

A report on the eaves trough and conductor pipe board of review was submitted by Louis Kuehn, Milwaukee Corrugating Co., Milwaukee, as chairman. He said that the prospects were bright for eliminating lighter than 28 gage for eaves trough and conductor pipe but one leading manufacturer refused to eliminate the lighter gages and he did not believe that the elimination could be placed in effect without the cooperation of that one manufacturer. The elimination of sizes and new list prices have been placed in effect and have helped the industry. In a discussion it was brought out that the South is opposed to the elimination of the 29 gage.

The action of the board of review in restoring 29 gage roll roofing to the schedule stirred up considerable discussion during which it was brought out that the committee itself was in favor of eliminating the 29 gage but had followed the request of many distributors and thought that by restoring this gage it might help to keep some of the business that was going to the asphalt roofing manufacturers. The board of review by vote was requested to reconsider its action on 29 gage roll roofing and it rescinded its previous decision to restore that gage to the schedule.

After this matter was disposed of the members voted to use their best efforts to bring about a discontinuance of the sale of 29 gage eaves trough and conductor pipe after July 1.

Trade Extension Work Progresses

THE work of the sheet steel trade extension committee was outlined by Murray Springer, Crosby-Chicago, Inc.

L. D. Brueckel reported that the terne plate situation is very satisfactory and business is improving because manufacturers are holding to standards of quality. He believed elimination of two grades will further stimulate the demand.

Members of the metal committee were elected for the ensuing year as follows: John Follansbee, Follansbee Brothers Co., Pittsburgh; F. J. McNeive, W. F. Potts, Son & Co., Inc., Philadelphia; L. D. Mercer, United Alloy Steel Corporation, Canton, Ohio; G. F. Ahlbrandt, American Rolling Mill Co., Middletown, Ohio; F. O. Schoedinger, Columbus, Ohio, and W. T. Ryan, E. P. Sanderson Co., Boston.

Those present expressed their preference for Cincinnati as the next meeting place.

GERMAN ACTIVITIES

Preparing to Capture Export Trade, Says Head of Stahlwerk Werner

Dr. Siegfried G. Werner, president of the Stahlwerk Werner, Düsseldorf, Germany, and president of the German Foundry Owners' Association, after a four weeks' visit in this country, stated just before sailing for Germany on Tuesday that he found American manufacturers suffering from lack of liquid means, the same influence which is retarding industrial expansion in Germany and England. He said that Germany is equipping for mass production and that many American methods which in the past have not been applicable there are now being investigated with interest and in some cases are being adopted. In foundry practice, the widespread utilization of the electric furnace he predicted would figure in this respect.

In Automobile Field

Germany, he said, is equipping for large overseas trade and expanding industrially just as fast as her capital will permit. In the automobile industry, the application of production methods is, of course, most apparent.

André Citroen, the "French Henry Ford," has entered into manufacturing arrangements with the firm of Opel, whose plant near Frankfort, Germany, is now turning out over 100 cars a day. These cars are of the light, popular priced type, having an engine power of but 10 to 15 brake horse power.

Another German manufacturer of this type of automobile is Brennabor, whose plant near Berlin also has a production of 100 cars a day. In the field of large high-priced cars the recent merging of the Daimler and Benz interests is bringing about a reorganization of manufacturing and distributing methods looking toward the control of the heavy car market in Europe.

Dr. Werner stated that with quantity production German manufacturers are combining high quality of workmanship, making every endeavor to capture export trade on the basis of excellence of product as well as low price. He said that the workmen of Germany are willing to work and are working efficiently. Wages are slightly higher than before the war. Molders are now getting 30 cents an hour and machinists about the same or in some cases about five cents less.

Dr. Werner visited foundrymen and equipment manufacturers in Buffalo, Pittsburgh, Cleveland, Detroit and Chicago. He attended the convention of the American Electrochemical Society at Niagara Falls last month. While there he was the guest of Edmund C. Sprague, sales manager of the Acheson Graphite Co., Niagara Falls.

American Foundrymen Invited to Düsseldorf

On behalf of the German Foundry Owners' Association he extended an official invitation to the members of the American Foundrymen's Association to attend the Düsseldorf Exposition next August, at which some interesting results of scientific methods of melting iron will be shown.

Dr. Werner lived in this country for some time, having spent about six years at the Newburgh plant of the American Steel & Wire Co. at Cleveland.

FREIGHT RATES ATTACKED

Birmingham to Memphis Rate Claimed to Give South Undue Advantage Over Pittsburgh

WASHINGTON, May 18.—The unusual importance at this time of railroad rate revisions as they affect iron and steel products has considerably heightened interest in recent action taken by the Interstate Commerce Commission. The outcome of the commission's steps is expected to have considerable bearing on competitive conditions between iron and steel producers in the South and those in the North. Of the three developments in this connection, the most important was the announcement by the commission last Thursday of suspension of schedules proposing to reduce by 7c. per 100 lb. the rates on manufactured iron and steel products from various Southern producing points, including Birmingham, to Memphis, Tenn., and to other points in Mississippi and Tennessee. These tariffs had been filed to become effective May 15, but were suspended until Sept. 12, during which intervening time investigation will be made and hearings held.

Recently the commission declined to suspend reduced rail-and-water rates from Pittsburgh to Memphis and St. Louis by way of the Inland Water-Ways Co. and the Louisville & Nashville Railroad. These latter rates went into effect April 30, and represent reductions from 56c. to 36.4c. per 100 lb. from Pittsburgh to Memphis and from 43c. to 35c. from Pittsburgh to St. Louis. Also, at about the same time, the commission suspended proposed rates from Southern producing points to Texas and other coastwise destinations by way of rail-and-barge to Mobile, Ala. It has been reported that these latter rates may be withdrawn; if so, the case would be disposed of without formal hearings. This would leave pending only the important case concerning the proposed 7c. reduction from Southern points to Memphis and other destinations in the Mississippi Valley.

Rates to Memphis Under Fire

This case was the source of vigorous protest from important iron and steel producers in the Pittsburgh, Wheeling, Youngstown, southern Ohio-Kentucky and St. Louis districts, who urged that the rates be suspended and hearings be held. Indicative of the proposed change was the proposal to reduce the rate from Birmingham to Memphis from 35c. to 32c. Among those protesting against the proposed reduction were the Chamber of Commerce of Youngstown, Ohio; the Pittsburgh Steel Co., Pittsburgh; Jones & Laughlin Steel Corporation, Pittsburgh; Laclede Steel Co., St. Louis; Belfont Steel & Wire Co., Ironton, Ohio; Wheeling Steel Corporation, Wheeling, W. Va.; American Rolling Mill Co., Middletown, Ohio, and Ashland, Ky., and the Newport Rolling Mill Co., Newport, Ky.

In its protest, on which some of the other producers also based their protest, the American Rolling Mill Co. told the Interstate Commerce Commission that, if the reduction from Birmingham and Atlanta to Memphis were allowed to become effective, the result would be to make Birmingham the controlling point of origin in the iron and steel industry. It was declared by Tariff Manager A. R. Kennedy of the Pittsburgh Steel Co. that the reduction was not justified by any commercial condition. In the protest of the Laclede Co. it was asserted that the change in rates would curtail, if it did not destroy, its business in the Mississippi Valley. It was added that it would make the Birmingham-Memphis rate 10c. less than the East St. Louis-Memphis rate.

Increasing the Discrimination

In the protest of the Jones & Laughlin Steel Corporation it was declared that the proposed rate would increase its disadvantage, while the Belfont company asserted that the proposed rates would "compound the present discrimination." The Jones & Laughlin protest pointed out that Memphis is the point of rail shipments by Jones & Laughlin and that the rates from Memphis to consuming points concern Jones & Laughlin for the same reason and in the same way that the rates from Birmingham to the same consuming points concern the Birmingham district shippers. It was pointed out that rates from Pittsburgh now are on a relatively higher level than the present rates from Birmingham.

The present and proposed rates and differences were set forth as follows:

From	To	Present	Proposed
Pittsburgh	Memphis	56c.	56c.
Birmingham	Memphis	32c.	25c.
		24c.	31c.

Iron and Steel Markets

NEW BUSINESS BETTER

Steel Corporation's May Orders Gain Over April

Sheet Bars $2 Lower—Pig Iron Buying Increases

The balance of the week's developments in the steel industry is apparently on the side of improvement. Ingot production is about holding its own at 70 per cent, and prices of finished steel are substantially unchanged. New business in some products shows an increase.

It now appears that the Steel Corporation, following its policy of the early months of 1923, though not to so great an extent, made more ingots and semi-finished steel in the first 3½ months of this year than it put through its rolling mills. The result is that its output of rolled steel is now running about 10 per cent in excess of its ingot production.

At the same time blast furnace operations, which can be readily decreased or increased, are being slightly reduced, the corporation taking off two furnaces in the Chicago district and one at Pittsburgh. An independent steel company furnace at Johnstown and one near Pittsburgh have also gone out.

Thus far in May the Steel Corporation's new business has been from 2000 to 3000 tons a day more than for the same period in April, a rate which, assuming the present operating percentage, will bring the May decline in unfilled orders well below that of April.

Reports in several directions of more numerous orders for finished steel relate chiefly to the activities of smaller buyers who rarely buy far ahead. Inventories of large buyers are apparently decreasing, but such consumers are waiting for a definite demonstration of a stiffening market.

Thus far none of the large car inquiry looked for from the Union Pacific, Santa Fe and Chesapeake & Ohio roads has come out, but the total of cars under consideration is put at 50,000. The New York Central has divided 10,000 tons of tie plates of a new design among three companies and the Missouri Pacific will close soon for 2500 tons.

Japan has bought 10,000 tons of rails in France at something under $34, delivered, American bids being several dollars a ton higher.

The automotive industry shows no signs of slackening its high pace, and agricultural implement manufacturers quite generally are operating their plants at capacity.

New inquiries for freighters have come to the Lake shipyards and those now pending will call for 10,000 to 15,000 tons of steel plates and shapes. Also of interest to plate mills is the Mokelumme pipe line in California, for which 15,000 tons of plates will be needed.

Another fairly good week in structural steel brought awards of more than 33,000 tons. New projects total nearly 29,000 tons, of which 16,000 tons is for an office building in the New York financial district.

April sales of fabricated structural steel represented 77 per cent of the country's capacity compared with a March business of 69 per cent. The four months of 1925 called for 757,000 tons or less than 5 per cent under the 795,000 tons of the corresponding period a year ago.

Sheet mills have succeeded at length in getting their raw material at $35, Youngstown, or $2 below the last price. This offsets in part the inroads the sheet industry has been making on its own market prices.

Bookings of steel castings for the first third of this year, according to reports to the Department of Commerce, were 10 per cent off from those for the corresponding four months of 1924. Purchases in April were substantially as large as in March.

Increasing competition and absorption of freight on Southern nut and bolt business has resulted in making Birmingham, Ala., a basing point on those products, in addition to Pittsburgh, Cleveland and Chicago.

The pig iron market gives more evidence of the imminence of low point, but the buying is not yet on the scale of a major movement, though 75,000 tons was booked at Chicago and 85,000 tons in the Cleveland district. In the Middle West foundry operations are now expanding apart from the railroad equipment trade. Foundry iron in eastern Pennsylvania and Bessemer iron in the Pittsburgh district are 50c. lower.

To the surprise of the Lake iron ore trade, in spite of the sharp reduction from 1924 made in the first sales for 1925, a further 25-cent concession was brought out last week by the appearance of a Pittsburgh district inquiry for 50,000 to 100,000 tons.

Pig iron, according to THE IRON AGE composite price, has fallen to $19.63, from $19.71 last week, the ninth successive weekly decline from $22.13 on March 17.

Pittsburgh

Steel Orders More Numerous—Pig Iron Weak in Face of Large Sales

PITTSBURGH, May 19.—The steel situation viewed from a sales, production or price angle is about holding its own. Three fewer blast furnaces are in operation this week than last week, but in a general way this and the nearby districts still show an average output of ingots of around 65 per cent of capacity, the same rate as a week ago. The Youngstown Sheet & Tube Co., the Bethlehem Steel Co. and the Carnegie Steel Co. each has taken off a furnace in the past week and the greater Pittsburgh area now has 75 out of 135 furnaces in production or 31 less than on March 1 last.

In several directions, steel orders are somewhat more numerous than they were recently, but it is observed that most of them are from the smaller buyers who rarely buy very far ahead and for that reason are pretty constantly in the market in good or bad times. Evidence is still lacking of a real buying movement, although it is believed that since consumption has been on a large scale over the past three months, buyers' inventories must now be pretty well reduced.

It is thought that some really good buying of sheets

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	May 19, 1925	May 12, 1925	Apr. 21, 1925	May 20, 1924
No. 2X, Philadelphia‡	*$21.26*	$21.76	$22.51	$22.76
No. 2, Valley furnace†	19.00	19.00	20.00	20.50
No. 2, Southern, Cin'ti†	24.05	24.05	24.05	25.05
No. 2, Birmingham, Ala.†	20.00	20.00	20.00	21.00
No. 2 foundry, Chicago*	21.00	21.00	22.00	22.50
Basic, del'd, eastern Pa.	21.00	21.00	22.75	21.00
Basic, Valley furnace	18.50	18.50	20.00	20.00
Valley Bessemer, del. P'gh	*$1.26*	21.76	22.76	23.76
Malleable, Chicago*	21.00	21.00	22.00	22.50
Malleable, Valley	19.00	19.00	20.50	20.50
Gray forge, Pittsburgh	20.26	20.26	21.26	21.76
L. S. charcoal, Chicago	29.04	29.04	29.04	29.15
Ferromanganese, furnace	115.00	115.00	115.00	107.50
Rails, Billets, etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	*$5.00*	$5.50	$5.50	$8.00
O.-h. billets, Pittsburgh	*$5.00*	$5.50	$5.50	$8.00
O.-h. sheet bars, P'gh	*$5.00*	$7.00	$7.00	$0.00
Forging billets, base, P'gh	40.50	40.50	40.50	43.00
O.-h. billets, Phila.	40.67	40.67	41.17	43.17
Wire rods, Pittsburgh	46.00	46.00	46.00	48.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	2.00	2.00	2.00	2.25
Light rails at mill	1.75	1.75	1.75	1.90
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.22	2.22	2.22	2.47
Iron bars, Chicago	*2.05*	2.10	2.10	2.25
Steel bars, Pittsburgh	2.00	2.00	2.00	2.25
Steel bars, Chicago	2.10	2.10	2.10	2.25
Steel bars, New York	2.34	2.34	2.34	2.59
Tank plates, Pittsburgh	2.00	2.00	2.00	2.20
Tank plates, Chicago	2.20	2.20	2.20	2.40
Tank plates, New York	2.24	2.24	2.34	2.44
Beams, Pittsburgh	2.00	2.00	2.00	2.25
Beams, Chicago	2.20	2.20	2.20	2.45
Beams, New York	2.34	2.34	2.34	2.49
Steel hoops, Pittsburgh	2.40	2.40	2.40	2.75

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	May 19, 1925	May 12, 1925	Apr. 21, 1925	May 20, 1924
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	3.20	3.20	3.30	3.60
Sheets, black, No. 28, Chicago dist. mill	3.40	3.40	3.50	...
Sheets, galv., No. 28, P'gh	4.30	4.30	4.50	4.80
Sheets, galv., No. 28, Chicago dist. mill	4.50	4.50	4.70	...
Sheets, blue, 9 & 10, P'gh	2.40	2.40	2.50	2.80
Sheets, blue, 9 & 10, Chicago dist. mill	2.50	2.50	2.60	...
Wire nails, Pittsburgh	2.75	2.75	2.75	2.90
Wire nails, Chicago dist. mill	2.85	2.85	2.85	...
Plain wire, Pittsburgh	2.50	2.50	2.50	2.65
Plain wire, Chicago dist. mill	2.60	2.60	2.60	...
Barbed wire, galv., P'gh	3.45	3.45	3.45	3.70
Barbed wire, galv., Chicago dist. mill	3.55	3.55	3.55	...
Tin plate, 100 lb. box, P'gh	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	$16.00	$16.00	$16.00	$16.50
Carwheels, Philadelphia	17.00	17.00	17.50	17.00
Heavy steel scrap, P'gh	17.00	17.00	17.00	16.60
Heavy steel scrap, Phila.	14.50	14.50	14.50	14.50
Heavy steel scrap, Ch'go	*15.00*	14.75	14.75	14.00
No. 1 cast, Pittsburgh	17.50	17.50	17.50	18.00
No. 1 cast, Philadelphia	17.00	17.00	17.00	17.00
No. 1 cast, Ch'go (net ton)	17.00	17.00	17.50	17.50
No. 1 RR. wrot, Phila.	17.50	17.50	17.50	16.50
No. 1 RR. wrot. Ch'go (net)	*13.50*	13.25	13.00	12.00
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$3.00	$3.00	$3.00	$3.25
Foundry coke, prompt	4.00	4.00	4.00	4.75
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	13.62½	13.62½	13.37½	13.12½
Electrolytic copper, refinery	13.37½	13.37½	13.12½	12.62½
Zinc, St. Louis	*6.90*	6.97½	6.80	5.77½
Zinc, New York	*7.23*	7.32½	7.15	6.12½
Lead, St. Louis	*7.85*	7.62½	7.40	7.00
Lead, New York	*8.15*	7.97½	7.75	7.15
Tin (Straits), New York	*54.25*	54.50	52.50	40.50
Antimony (Asiatic), N. Y.	*17.00*	17.50	11.87½	8.75

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

THE IRON AGE Composite Prices

May 19, 1925, Finished Steel, 2.460c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

May 12, 1925,	2.460c.
April 21, 1925,	2.531c.
May 20, 1924,	2.639c.
10-year pre-war average,	1.689c.

May 19, 1925, Pig Iron, $19.63 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

May 12, 1925,	$19.71
April 21, 1925,	20.75
May 20, 1924,	21.04
10-year pre-war average,	15.72

High				Low			
1923	1924	1925		1925	1924	1923	
2.824c., April 24	2.789c., Jan. 15	2.560c., Jan. 6	Finished Steel	2.460c., May 5	2.460c., Oct. 14	2.446c., Jan. 2	
$30.86, March 20	$22.88, Feb. 26	$22.50, Jan. 13	Pig Iron	$19.63, May 19	$19.21, Nov. 3	$20.77, Nov. 20	

would take place if there was more stability to prices, as the common idea is that the primary cause for dullness in that direction is due to price irregularity which leaves the buyers in doubt as to whether the prices have gone as low as they will. As there is a reasonable degree of stability to prices of other products, however, and this condition has not inspired free buying, it is evident that consumers still are fairly well supplied and, not being impressed with the possibility of an early price advance, are disposed to liquidate what they have.

The recent drop in pig iron prices appears to have slightly stimulated interest on the part of melters, particularly in foundry grade, but larger sales do not appear to have entirely arrested the downward trend of prices. Bessemer grade has eased off 50c. a ton and the price of $19, Valley furnace, for No. 2 foundry is subject of some shading.

The recent business in heavy steel scrap has had the effect of stiffening the price ideas of dealers, few of whom now would be willing to take additional tonnage of that grade as low as $17, the basis of recent sales. There is still too much coke for the demand and prices are easy, while continued curtailment of coal production has failed to bring about any strengthening of prices.

Pig Iron.—Prices have reached levels that find some appeal to buyers and sales of foundry iron, while not individually large as a rule, have been more numerous than they were recently. In a general way this grade is holding fairly well at $19, Valley furnace, for No. 2 and for shipment into Pittsburgh that price has been

the ruling one. To some points outside of Pittsburgh, however, freight rates have been a factor in the price and there are cases where buyers have succeeded in securing tonnages at the equivalent of $18.75 at Valley furnace. Makers of this grade, however, are inclined to take a firmer stand because recent blast furnace suspensions have materially reduced production. There is now only one furnace in this territory the entire production of which is coming upon the market. And while furnace yard stocks are large, it is stated that the melt is holding up and deliveries to consumers are good. Some of the trade already are counting on a possible suspension of anthracite coal mines around Sept. 1, when the present wage scale agreement expires, as likely to create a demand for coke as a substitute and a consequent advance in the coke prices. Only small lots of Bessemer iron are being sold and these have been at $19.50 and $20, Valley furnace. No activity has been noted in basic grade since the recent round lot purchased by a Pittsburgh district steel company, this business amounting roughly to about 10,000 tons. A few small sales of malleable iron are noted at $19 for standard grade, while as much as $19.50 was paid for some high silicon malleable iron.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$18.50
Bessemer	$19.50 to 20.00
Gray forge	18.50
No. 2 foundry	19.00
No. 3 foundry	18.50
Malleable	19.00
Low phosphorus copper free	28.50

Ferroalloys.—Interest in supplies on the part of consumers still is very limited. The movement of material on contracts is steady, but apparently consumption is not heavy enough to require additional supplies and there are only infrequent inquiries and these usually for a carload. German ferromanganese is available at $110, c.i.f., Atlantic seaboard, duty paid, and a few small sales are reported at the expense of the higher priced domestic and British material. Prices are given on page 1537.

Semi-Finished Steel.—The market here is dull and not overly steady, as producers are more anxious to sell than consumers are to buy. Mechanical tubing is doing well on account of the present activity of the automotive industry; this creates a demand for billets, but hardly enough to offset the lack of buying by the makers of strip steel, who although doing a reasonably good business are not taxed and are carrying fairly large stocks of billets and slabs. The tendency is to liquidate these stocks rather than to add to them. The public quotation still is $35.50 for billets and slabs, but buyers claim lower quotations and sales at that figure are not numerous. The nonintegrated sheet manufacturers find it hard to come out whole with sheet bars at $37 and finished sheet several dollars a ton below the levels of last fall when $37 became the established sheet bar price. There is, accordingly, a tendency to keep both purchases and specifications at a minimum and makers find some difficulty moving production at quotations. Demand for forging billets is chiefly in connection with requirements of the automobile industry; the differential of $10 a ton over rolling billets quoted by some makers refers to steel conforming to S. A. E. specifications or an equally narrow chemical analysis. Just a fair demand is noted for wire rods. Pipe skelp is slow of sale and no longer is selling at higher than 2c. Prices are given on page 1537.

Wire Products.—Business is slightly better with mills in this area but it is in number rather than size of the orders that the improvement is seen. Purchases indicate a good consumption, but also that distributors are still well stocked, since the orders are of a character to suggest rounding out rather than the upbuilding of stocks. The fact that this branch of the steel industry is operating only 50 to 55 per cent of capacity plainly indicates the size of the demand and the lack of forward buying. Price irregularity still is noted, but the common report is that observance of quotations is stronger east than west of Pittsburgh. Coated nails are subject to considerable price cutting. Prices are given on page 1536.

Rails and Track Supplies.—The New York Central Lines has finally closed for 10,000 tons of tie plates, the inquiry for which has been out for several weeks. Pittsburgh, Chicago and Buffalo makers divided this business and it is reported that the price was 2.35c. per lb. mill. Otherwise, track supplies have been slow and with one large maker of small spikes quoting $3, base, per 100 lb., efforts by others to secure more have been rather futile. No recent sales of light billet rails have been made at more than 1.75c., base, mill, and with makers willing to consider less on a sizable lot, the occasion for a higher quotation does not exist. Prices are given on page 1536.

Tubular Goods.—Recent pipe line awards include 12 miles of 8-in. by the Texas Co., 33 miles of 10-in. plain end pipe for the Empire Gas Pipe Line Co., Bartlesville, Okla., and 6 miles of 16-in. and 4 miles of 12-in. pipe by the Union Gas Electric Co., Cincinnati. Buyers are not anticipating their requirements and few mills have any backlog business. Boiler tube business could be better, but there is not much complaint about the way mechanical tubing is moving, as the automotive industry just now is active and taking some good-sized tonnages. Pipe prices are holding well and price cutting in boiler tubes is not as extensive as it was late last year. Discounts are given on page 1536.

Sheets.—There is an impression that a turn in this market is not far off. Producers now are finding that price cutting is discouraging rather than stimulating the demand and as present prices show many of them large losses, selling pressure if anything, is less than it was recently. In some quarters, it is believed that buyers are ready to buy beyond their actual and known requirements once they are satisfied that prices have struck a bottom, but evidence of price stability still is lacking, seeing that within the past week there have been reports of sales of black sheets at 3.10c., base, and of single pickled black sheets at the same figure, and fearful of not buying at the bottom, many buyers are careful not to buy more than they see a need for. Locally, the market is regarded as 3.30c. to 3.40c., base for black, 4.30c. to 4.40c., base, for galvanized and 2.40c. to 2.50c., base, for blue annealed. Mill operations are averaging about 65 per cent of capacity. Prices are given on page 1536.

Tin Plate.—There is no change in the favorable outlook for tin plate and for that reason no interruption in the flow of specifications or the shipments against contracts. Strictly new business is very moderate, but all mills are well supplied with contract business and operations continue at an average of about 85 per cent of capacity, which is high by comparison with most divisions of finishing capacity. The price is a fixture at $5.50 per base box, Pittsburgh, for standard cokes for domestic account, subject to the usual differentials to the large consumers.

Cold-Finished Steel Bars and Shafting.—Demand, as typified by specifications on contracts, is steady and satisfactory. The automotive industry is taking good-sized quantities of screw stock bars and some makers note improvement in the orders from tool and textile machinery makers. It is said that there are no important deviations from the regular market price of 2.70c., base, Pittsburgh, except in the equalization of freight with mills more favorably located with relation to destinations. Shafting demands are light. Prices are given on page 1536.

Bolts, Nuts and Rivets.—Bolt and nut manufacturers in this district and in other Northern and Eastern districts now are quoting f.o.b. Birmingham, as well as Pittsburgh, Cleveland and Chicago. It seems that there recently has been a good deal of competition on Southern business and as some freight had to be absorbed, a base at Birmingham might just as well be established. Bolt and nut business generally is still slow and entirely hand-to-mouth in character. Prices are unchanged except for the inclusion of Birmingham as a base. Rivet business could be better. The contract prices are holding well, but on lots for immediate shipment, there have been sales of large

rivets as low as $2.40, base, per 100 lb. Prices and discounts are given on page 1536.

Steel and Iron Bars.—There is fairly well sustained small lot buying of steel bars, but it is proving no tax upon the ability of mills to supply it and very prompt deliveries are being made. There is close observance of quoted prices, because it is not believed that business would be created by concessions. Iron bars are steady as to price and demand. Prices are given on page 1536.

Structural Material.—Business still is slow with steel fabricators in this district, who while getting a fair number of inquiries are not securing many awards and still find the fabricated steel price to be very competitive. Three local fabricators were bidders for the 1800 tons for the new office building of the Rochester Gas & Electric Co., Rochester, N. Y., but the business appears to have been placed elsewhere. There is not much activity in plain material but recent prices are holding so far as this immediate territory is concerned. Prices are given on page 1536.

Plates.—Two local car building companies have shared in the recent car order of the Chicago, Milwaukee & St. Paul. The Standard Steel Car Co. and the Pressed Steel Car Co. have received 1000 cars, the total steel requirements amounting to close to 20,000 tons. This business will at least mean the specification of a considerable tonnage of plates. Business, otherwise, is rather quiet and while there are occasional sales at 2.10c. base, Pittsburgh, the ruling figure is 2c. Prices are given on page 1536.

Cold Rolled Strips.—The situation in this product still leaves much to be desired. There is not enough demand to go around among all makers and those with the lowest costs are setting the market price. As they are taking business at 3.75c., base Pittsburgh, even for small lots, sales at higher figures are very difficult.

Old Materials.—Having sold heavy melting steel at $17, dealers now are disposed to hold this grade for an even higher price. Efforts to secure more, however, have failed as the one consumer, who has been in the market, appears to have covered all immediate requirements and others do not appear ready to buy. No sales having been made at less than $17, the top and bottom of the market on this grade appears to be $17. Compressed sheets have sold up to $16.25 and thus have restored a more normal price relation with heavy melting steel. We note one sale of 1000 tons of long rails to a local steel maker at $16. The best bid on turnings still is $12, but that offer is not bringing out many acceptances because relatively better returns to sellers can be secured by shipments to northern and central Ohio points. Cast iron borings have sold up to $13.50.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel	$17.00
No. 1 cast, cupola size	$17.50 to 18.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	17.50 to 18.00
Compressed sheet steel	15.75 to 16.25
Bundled sheets, sides and ends	14.50 to 15.00
Railroad knuckles and couplers	19.00 to 19.50
Railroad coil and leaf springs	19.00 to 19.50
Low phosphorus blooms and billet ends	21.50 to 22.00
Low phosphorus plate and other material	20.50 to 21.00
Railroad malleable	17.00 to 17.50
Steel car axles	19.50 to 20.00
Cast iron wheels	17.00 to 17.50
Rolled steel wheels	19.00 to 19.50
Machine shop turnings	12.00 to 12.50
Short shoveling turnings	12.00 to 12.50
Sheet bar crops	19.00 to 19.50
Heavy steel axle turnings	16.50 to 17.00
Short mixed borings and turnings	12.00 to 12.50
Heavy breakable cast	14.00 to 14.50
Stove plate	13.50 to 14.00
Cast iron borings	13.00 to 13.50
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	17.00

Coke and Coal.—Curtailment of coke production has not yet reduced the supply to a level of demand and the effort of producers to market surplus tonnage is keeping prices in buyers' favor. Furnaces in blast are all covered by contracts and there is not much chance to dispose of the surplus furnace coke for some other use, since high sulphur and heating coke can be had very cheaply. The asking price on spot furnace coke is $3 per ton at ovens, while heating coke is selling around $2.50 to $2.60. Production of foundry coke has increased as a result of the lighter demand for furnace grade and offerings of unselected 72-hr. coke at low prices have affected the market on standard grade. For selected 72-hr. coke $4.25 per net ton at ovens now is maximum while the bulk of the business is at $4. There is not enough demand for coal to make the reduced production an effective price factor. Prices are given on page 1537.

Wage Demand of Bar Iron Workers

Demands of the Amalgamated Association of Iron, Steel and Tin Workers to be considered at a bar iron conference to convene at Atlantic City, June 8, are equivalent to a 12.3 per cent increase in the wages of bar iron mill employees. The changes asked follow: An advance of 15 per cent in the base price of all jobs on bar and guide mills. An advance of 10 per cent in the base price of all hookers on all bar iron mills. That rundowns on the bar and guide mills receive 40 per cent of furnace. That a restroom be provided in a convenient place for furnace men and roll hands on all finishing mills. That on bar and guide mills the charging time on single turns shall in no case exceed 8 hr. That all roll hands be paid for changing rolls on all bar and guide mills. That the time of pay days be left to local settlement.

Pig Iron Meeting at Cincinnati

The Southern Ohio Pig Iron and Coke Association will meet in joint session with the Ohio section of the American Institute of Mining and Metallurgical Engineers at the Hotel Gibson, Cincinnati, on Wednesday afternoon and evening, May 27.

In the morning there will be a meeting of the coal evaluation committee. This committee will make its report at the afternoon session, the program for which also includes papers by blast furnace men on the effects of the hot humid spell of weather in the week of April 21 on blast furnace operations. After the banquet in the evening there will be motion pictures showing the operations of blast furnaces, openhearth furnaces and rolling mills. The Southern Ohio Pig Iron and Coke Association will hold its annual election of officers at a short business meeting.

Pressed Metal Society Formed

The recently formed National Pressed Metal Society, the first meeting of which was held in Chicago April 11, is a technical or engineering society and its activities will be devoted exclusively to discussions of the arts and sciences connected with the pressing of metals and a study of the subjects relating to the manufacture, use and properties of pressed metal parts.

F. J. Rode, mechanical engineer, Marquette Tool & Mfg. Co., Chicago, spoke on the "Selection of Pressed Metal Equipment." He cited examples of different equipment and operations used in several plants for the same stamping. Selecting equipment of the proper capacity for each operation was emphasized. The use of equipment far in excess of the necessary capacity, with resultant slow operating speeds and high depreciation charge, he said, often represents the difference between profit and loss. The officers for the coming year are: President, John C. Biemeck, Cooney Mfg. Co., Chicago; vice-president, George E. Wattman, Adams & Westlake Co., Chicago; secretary-treasurer, D. L. Mathias, Andresen Co., Pittsburgh. The temporary address of the society is Box 65, Pittsburgh.

Protests Cast Iron Pipe Imports

WASHINGTON, May 19.—Strong protest against imports of cast iron pipe have been received by the Customs division, Treasury Department, and have been referred to the anti-dumping unit at New York for preliminary investigation.

Chicago

Large Movement in Pig Iron—Increasing Interest in Steel

CHICAGO, May 19.—Sales of pig iron during the week are estimated at 75,000 tons. Most of this buying was done quietly without the broadcasting of inquiries. No general buying movement has yet developed and there is still a feeling in some quarters that the market may momentarily drop another dollar a ton to bring out heavy tonnage orders.

Demand for finished steel has shown little actual change, being confined principally to purchases to balance up stocks. Consumers are still drawing on the steel which they bought early in the year, but the trade is confident that the time is close at hand when fresh purchases must be made. It is perhaps significant that the larger buyers are feeling out the market to a greater extent than at any time since the forepart of the year. Meanwhile the price situation has shown no further changes of importance.

Railroad car buying has been light, but the Pennsylvania has issued a large inquiry for passenger equipment, totaling 367 cars. The New York Central has distributed orders for 10,000 tons of tie plates, and the Missouri Pacific will close shortly for 2500 tons. Railroad car building shops in this district have been on a very low basis of operations, but the 5500 cars placed by the St. Paul will give them work for a time. Other orders will be needed, however, and up to date current rumors of impending large inquiries from the Union Pacific, Santa Fe and the Chesapeake & Ohio have failed to materialize. The automobile industry is operating full tilt and in April shipped the largest number of passenger automobiles and trucks for any month in history. This activity is reflected in the output of a local alloy steel bar mill, which is at capacity.

In general, however, steel production in this district shows further contraction to meet reduced demands. The blowing out of one furnace each at Gary and South Chicago has cut down the number of active steel works blast furnaces to 26 out of 35. Steel output has declined to 90 per cent of ingot capacity. Local mills rolling the heavier finished products still have substantial backlogs, especially in bars on which they are committed three months ahead. Rail tonnage will keep the Gary mill operating through the third quarter.

Pig Iron.—While most buyers are still feeling out the market, some of them have actually taken action and sales in this district during the week are estimated at 75,000 tons or over. Much of this tonnage was placed without the broadcasting of inquiries. In most instances deliveries were asked through the third quarter and in some cases through the last half. Inquiries still open include 1200 tons of foundry wanted by a Michigan warm air furnace manufacturer and 1000 tons of foundry and 500 tons of 5 per cent asked for by a Michigan stove maker. Several hundred tons of silvery have been bought in this immediate district, but at concessions of $1 to $1.50 below the regular schedule. Numerous scattered sales of charcoal iron have brought $26, furnace. Little Southern foundry is penetrating into this territory, but as low as $18, base Birmingham, has been done. A current inquiry calls for 300 tons of 14 to 16 per cent electric ferrosilicon. This commodity is quoted at $43.42, delivered.

Quotations on Northern foundry, high phosphorus, malleable and basic irons are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25	$21.00
Northern No. 1 foundry, sil. 2.25 to 2.75	21.50
Malleable, not over 2.25 sil.	21.00
Basic	21.00
High phosphorus	21.00
High Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2, sil. 1.75 to 2.25	$24.01 to 24.51
Low phos., sil. 1 to 2 per cent, copper free	32.65
Silvery, sil. 8 per cent	31.29
Electric ferrosilicon, 14 to 16 per cent	44.00 to 45.00

Ferroalloys.—From 3000 to 4000 tons of spiegeleisen has been sold since the first of the month, some of the larger orders going at as low as $38.04, delivered. Sales of ferromanganese have been confined to scattered carlots. Resale material, which has been moving at a concession of $1 a ton, has not entirely disappeared.

We quote 80 per cent ferromanganese, $122.56, delivered; 50 per cent ferrosilicon for 1925 delivery, $85, delivered; spiegeleisen, 18 to 22 per cent, $38.04 to $40.04, delivered.

Plates.—For the 5500 cars placed by the St. Paul last week, orders for 45,000 tons of steel, exclusive of the axles, have been distributed, 30,000 tons going to the leading local mill and 15,000 tons to the foremost independent. No new lettings of oil storage tanks are reported, but pending work along the Gulf Coast and in California aggregates 6000 tons. An inquiry for eight barges for Mississippi River service calls for 1200 tons of plates. Prices are steady at 2.20c., Chicago, but in neutral territories competition from outside producing centers is still severe.

The mill quotation is 2.20c., Chicago. Jobbers quote 3.10c. for plate out of stock.

Structural Material.—Leading fabricating awards for the week include an auditorium building, Minneapolis, 4014 tons, placed with the Minneapolis Steel & Machinery Co., and a Northern Pacific bridge, Minneapolis, 673 tons, which went to the Fort Pitt Bridge Works. New business in plain material is relatively light, as most fabricators bought heavily early in the year and still have steel in stock or on contract. However, they have been drawing so heavily upon their supplies that mills believe new buying must ensue soon.

The mill quotation on plain material is 2.20c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Bars.—Specifications for soft steel bars remain liberal, but new buying is principally for the purpose of balancing up stocks. Shipments of bars indicate that the automobile industry is operating at close to capacity. Farm implement makers find a sustained demand for their products, especially small tractors. Soft steel bars continue to range from 2.10c. to 2.20c., Chicago, the higher figure being restricted largely to limited tonnages. Bar iron has declined, now being quoted at 2.05c. to 2.10c., Chicago. The price recession has tended to stimulate buying, one producer having accumulated a two months' backlog. The Republic Rolling Mill Corporation will start operations at its East Chicago plant June 1. Demand for alloy steel reflects the high rate of activity in the automobile industry. The local mill making this product is running at capacity. Shipments of automobiles and trucks in April, at 430,000, were the largest for any month in history.

Mill prices are: Mild steel bars, 2.10c. to 2.20c.; common bar iron, 2.05c., Chicago; rail steel, 2.10c., Chicago mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.80c. for rounds and hexagons and 4.30c. for flats and squares; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.60c. to 2.70c.

Sheets.—Inquiry is more active, although actual orders and specifications are still limited to relatively small tonnages. The decline in prices has come to a halt, and some of the large buyers have put out feelers. This revival of interest indicates that the consuming trade believes that the market level is approaching, if it has not yet reached its low point.

Chicago delivered prices from mill are 3.45c. to 3.50c. for No. 28 black, 2.55c. to 2.60c. for No. 10 blue annealed and 4.55c. to 4.60c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.80c. base for blue annealed, 4.50c. base for black, and 5.50c. base for galvanized.

Wire Products.—Prices, while still soft, are no weaker than heretofore. Business in common products shows no improvement and mills now look ahead to the fall for a revival in trade. Specifications for manufacturing wire, however, are heavier than for some time. This betterment, in part, reflects the activity in the automotive industry. For mill prices see page 1536.

We quote warehouse prices f.o.b. Chicago: No. 8 black annealed wire, $3.05 for 100 lb.; common wire nails, $3.15 per keg; cement coated nails, $2.45.

Rails and Track Supplies.—The New York Central has placed orders for tie plates, calling for a minimum of 8000 tons and a maximum of 10,000 tons, dividing the business equally among Illinois Steel Co., Jones & Laughlin Steel Corporation and the Bethlehem Steel Co. The Missouri Pacific inquiry for 2500 tons of tie plates is expected to be closed soon. The railroads are confining their purchases of spikes, bolts and angle bars to small lots, representing their current needs, but orders of this kind are numerous, representing a considerable tonnage in the aggregate. Spikes and bolts are slightly weaker, ranging from 2.90c. to 3c. and 3.90c. to 4c., respectively. Local rail producers have good backlogs. The Gary mill is producing 70,000 tons monthly and on the basis of present bookings will be able to maintain that rate through September.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, 1.80c. to 1.90c., f.o.b. makers' mill.

Standard railroad spikes, 2.90c. to 3c. mill; track bolts with square nuts, 3.90c. to 4c. mill; steel tie plates, 2.35c., f.o.b. mill; angle bars, 2.75c. f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.55c. base, and track bolts, 4.55c. base.

Cast Iron Pipe.—In general, pipe shops have accumulated close to 60 days of work and are less disposed to sacrifice price for the sake of tonnage. Efforts to hold to a minimum of $40 base, Birmingham, for 6-in. and larger are more successful, although lower prices have not entirely disappeared. On a small tonnage for Chicago, $39.33, Birmingham, was named. The American Cast Iron Pipe Co. will furnish 700 tons for Bloomfield, Mich.; 100 tons of fittings for Chicago, and 50 tons for Oconomowoc, Wis. Ferndale, Mich., has placed 1000 tons with James B. Clow & Sons. Manitowoc, Wis., has awarded an additional 200 tons to the National Cast Iron Pipe Co. The same company has booked 52 tons of 3 and 4-in. for Chicago. Pending work includes:

Hammond, Ind., 132 tons of 16 and 24-in., bids to be taken May 25.

Royal Oak, Mich., 411 tons, 6, 8 and 12-in.; May 25.

Booneville, Ind., 1350 tons 12 and 16-in.; May 18.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $51.20 to $52.20; 6-in. and over, $47.20 to $48.20; Class A and gas pipe, $4 extra.

Bolts and Nuts.—The market situation is unchanged, with buying cautious and discounts unchanged, although subject to shading. On attractive specifications an extra discount of 5 per cent is not uncommon. New business, however, is confined largely to small orders, although specifications against contracts are liberal from some sources, notably the automobile and implement industries. For prices see page 1537.

Jobbers quote structural rivets, 3.50c.; boiler rivets, 3.70c.; machine bolts up to ⅝ x 4 in., 55 per cent off; larger sizes, 55 off; carriage bolts up to ⅝ x 4 in., 50 off; larger sizes, 50 off; hot-pressed nuts, squares, tapped or blank, $3.50 off; hot-pressed nuts, hexagons, tapped or blank, $4 off; coach or lag screws, 60 per cent off.

Reinforcing Bars.—Relatively few concrete bar contracts were placed during the week, but considerable new prospective work has made its appearance. General contract bids were taken May 11 on 1200 tons of steel for Illinois highways and bridges. Another section of the South Water Street double decking project, Chicago, requiring several hundred tons, has come up for figures. Prices on billet steel reinforcing bars range from 2.60c. to 2.70c., Chicago warehouse, with the higher figure disappearing. Lettings include:

South Water Street double decking, Section 2, Chicago, 700 tons, to Truscon Steel Co.

Section B, sewer, St. Paul, Minn., 600 tons, to Clinton Bridge Co.

Thorp Public School, Eighty-ninth and Burley Streets, Chicago, 100 tons, to Calumet Steel Co.

Coakley Brothers, public warehouse, Milwaukee, 300 tons, to Barton System of Reinforcing.

Pending work includes:

Illinois State highway work, 1200 tons, general contract figures taken May 11.

Old Material.—A number of grades have advanced, largely because of speculative buying on the part of brokers. On the whole, consumers are remaining out of the market, although an iron mill bought busheling and wrought at advanced quotations and a large foundry bought a considerable quantity of railroad cast at $17.50 per gross ton delivered. Railroad offerings include the Rock Island, 5200 tons; the Fruit Growers Express, 1000 tons; the St. Paul, 650 tons; the Baltimore & Ohio Chicago Terminal, 400 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	$16.00 to $16.50
Cast iron car wheels	16.00 to 16.50
Relaying rails, 56 and 60 lb.	25.00 to 26.00
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Forged steel car wheels	18.50 to 19.00
Railroad tires, charging box size	18.50 to 19.00
Railroad leaf springs, cut apart	18.50 to 19.00
Rails for rolling	17.00 to 17.50
Steel rails, less than 3 ft.	17.50 to 18.00
Heavy melting steel	15.00 to 15.50
Frogs, switches and guards cut apart	15.50 to 16.00
Shoveling steel	14.50 to 15.00
Drop forge flashings	11.00 to 11.50
Hydraulic compressed sheets	12.75 to 13.25
Axle turnings	13.50 to 14.00
Steel angle bars	16.50 to 17.00
Steel knuckles and couplers	17.50 to 18.00
Coil springs	19.00 to 19.50
Low phos. punchings	16.50 to 17.00
Machine shop turnings	8.50 to 9.00
Cast borings	9.75 to 10.25
Short shoveling turnings	9.75 to 10.25
Railroad malleable	17.50 to 18.00
Agricultural malleable	16.50 to 17.00
Per Net Ton	
Iron angle and splice bars	16.00 to 16.50
Iron arch bars and transoms	18.50 to 19.00
Iron car axles	25.50 to 26.00
Steel car axles	17.00 to 17.50
No. 1 busheling	11.50 to 12.00
No. 2 busheling	8.50 to 9.00
Pipes and flues	10.50 to 11.00
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	13.25 to 13.75
No. 1 machinery cast	17.00 to 17.50
No. 1 railroad cast	15.25 to 15.75
No. 1 agricultural cast	15.25 to 15.75
Locomotive tires, smooth	16.00 to 16.50
Stove plate	13.50 to 14.00
Grate bars	13.50 to 14.00
Brake shoes	13.25 to 13.75

Safety Conference Held

LOS ANGELES, May 14.—Resulting in a better knowledge of accident prevention methods in industrial plants and a closer acquaintanceship among the safety engineers of the entire West, the second Pacific Coast Safety Conference was held May 6, 7 and 8 at Los Angeles, with approximately 400 delegates in attendance. The conference was conducted under the auspices of the Southern California Society of Safety Engineers, the American Society of Safety Engineers, the engineering and petroleum sections of the National Safety Council and other interested organizations.

Reese H. Taylor, general superintendent of the Llewellyn Iron Works, acted as chairman at the first session of the conference, which was devoted to papers relating to fundamentals of industrial accident prevention. Carrol A. Stilson, manager and secretary Metal Trade Manufacturers' Association, read a paper on "Industrial Accident Prevention in Metal-Working Shops," in which were embodied some of the principal points advocated by the National Safety Council and local applications of the safety measures.

Representing the metal trades at the conference were the following: A. J. Carty and H. V. Thompson, Baker Iron Works; Charles F. Drenk, William Jardh and H. D. Young, Axelson Machine Co.; D. Bertone, Union Iron Works; P. E. Binder, welding foreman Standard Oil Co. of California; J. F. Evans, Pullman Co.; C. G. Giegerich, Llewellyn Iron Works, and Bruce Johnson, United States Smelting, Refining & Mining Co., Midvale, Utah.

The Navy Department, Washington, will receive bids until May 27 for the purchase of the 502-acre destroyer and submarine base at Squantum, Quincy, Mass.

New York

Nearly 20,000 Tons of Structural Inquiry —Pig Iron Moving

NEW YORK, May 19.—Another week has passed having total pig iron sales in the New York district estimated at 25,000 tons or more, the iron being taken largely for third quarter. Under the conditions recently existing variations in the prices realized are not surprising. In one or two cases there has been liquidation of stocks of iron accumulated at furnaces and it also appears that some of the low-priced sales have been by interests other than producers. The purchases of a textile foundry in Massachusetts have interested local sellers, though none of the total of 8000 tons bought went through local offices. A foundry interest which has plants at a number of points, including Newark, Baltimore, Lansdale, Pa., and Medina, N. Y., bought 5000 tons for third quarter. Inquiry is coming from a number of directions, a New England company being in the market for 3000 to 5000 tons, while the General Electric Co. is asking for 1500 tons, mostly high silicon, for Eastern plants, third quarter delivery, with further amounts likely to be wanted by this company. There are diverse reports as to the prices realized on sales from Buffalo, a range of $18.50 to $19 for No. 2 plain being still reported. Some eastern Pennsylvania furnaces have been quoting $20.50 for No. 2 plain as a minimum, but business has been taken at $20.25, with reports of $20 persisting, though this latter price is not traceable on transactions of the past week. One inquiry that has come out is for 1000 tons of No. 2 plain for June and third quarter delivery, and a New York foundry is in the market for 1000 tons. Consumers are keeping in close touch with the market and there is evidence of increasing interest in locating the low point.

We quote delivered in the New York district as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25	$22.77 to $23.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	23.02 to 23.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	22.77 to 23.02
Buffalo, sil. 1.75 to 2.25	23.91 to 24.41
No. 2 Virginia, sil. 1.75 to 2.25	28.44

Ferroalloys.—Demand for ferromanganese and spiegeleisen continues of a hand-to-mouth order, with sales and inquiries made up of small and carload lots. The volume is by no means large. One or two resale lots of ferromanganese are reported as having been sold at around $106, but for new business the regular quotations are firm for both alloys.

Cast Iron Pipe.—Producers of pressure pipe are well booked with business for the next 60 days or more. Competition from the French maker of water pipe has not been so active lately and prices of domestic makers are showing slightly more stability. Soil pipe is showing a fair degree of activity but prices are still very irregular, concessions from the usual schedule of discounts ranging to as high as several points.

We quote pressure pipe per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $50.60 to $51.60; 4-in. and 5-in., $55.60 to $56.60; 3-in., $65.60 to $66.60, with $5 additional for Class A and gas pipe. Discounts of both Northern and Southern makers of soil pipe, f.o.b. New York, are as follows: 6-in., 43½ to 45½ per cent off list; heavy, 53½ to 55½ per cent off list.

Finished Iron and Steel.—Structural steel continues somewhat more active than other lines of finished steel, the week's awards in the metropolitan district exceeding 12,000 tons, while nearly 20,000 tons are involved in a few new projects. One of these, the proposed Equitable Trust Co. building in the Wall Street district, runs 16,000 tons. Fabricators of structural steel complain of ruinously low prices, but they continue to compete aggressively. The Equitable job was not expected to come into the market until later in the year, but present low prices are believed to have induced the general contractor to advertise for steel bids now. Orders for various steel products from manufacturing consumers and jobbers continue to come to steel company offices at a very fair rate. The exception is plates, for which there is little demand. On carload lots plates are generally quoted at 1.90c., Pittsburgh basis, while on less than carloads mills are trying to obtain 2c. Three of the larger producers of plates, shapes and bars are still making an effort to obtain 2.10c., Pittsburgh, on these products for less than carload lots, but on carloads or more they are meeting competition. Bars are fairly well held at 2c. Structural shapes vary in price from 1.85c. to 2c., depending upon the mill and the character of the specification. Sheets are weak, but an effort is being made by some producers to hold them at the levels reported a week ago, namely 2.40c. for blue annealed, 3.20c. for black and 4.30c. for galvanized, all Pittsburgh base. Plain wire has been quoted at 2.45c., although 2.50c. is the usual quotation, while nails seem to be holding at 2.75c., Pittsburgh, but are moving slowly.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. to 2.44c.; plates, 2.24c. to 2.34c.; structural shapes, 2.24c. to 2.34c.

Warehouse Business.—Jobbers in this area find little demand. Business bobs up here and there but only in small quantities. Prices waver, concessions being available on almost any sizable lot. The leading independent did the smallest volume of business in several weeks. It is understood that no immediate reductions in cold-rolled strips will be made here, as were made in Cleveland, Detroit and Chicago by Edgar T. Ward's Sons Co. There was fair activity in reinforcing bars, now quoted at $3.24 per 100 lb. base. See page 1550 for prices. We quote boiler tubes per 100 ft. as follows:

Lapwelded steel tubes, 2-in., $17.33; seamless steel, 2-in., $20.24; charcoal iron, 2-in., $25; 4-in., $67.

Coke.—There is a situation approaching a balance between active furnaces and active ovens, hence an absence of accumulations of coke. Where spot furnace grade can be had, it goes at $3 to $3.15. Reckoning for third quarter requirements lacks interest, partly due to the large number of inactive furnaces, partly to the uncertainty in future prices. Neither buyer nor seller feels sure of his ground; furnaces cannot gage third quarter activity and some coke operators fear that the first flush of activity may bring demands for higher wages. Foundry grades move moderately well. The present idea of one operator on third quarter prices is for furnace coke, $3 to $3.15; for foundry coke, $4 to $4.50. By-product coke is unchanged at $10.41, Jersey City.

Old Material.—Prices are generally unchanged, but better sentiment is evident with brokers exhibiting slightly more haste to fulfill low priced contracts. Heavy melting steel is unchanged, brokers paying $14 to $15 per ton, delivered, eastern Pennsylvania consumers. A Phoenixville consumer of bundled skeleton, machine shop turnings and stove plate has increased its offering price 50c. per ton to $12.50 for skeleton and turnings and $13 per ton for stove plate. Specification pipe is stronger, some brokers offering up to $15 per ton, delivered. Heavy breakable cast also shows more strength with as high as $12.50 per ton paid by some brokers.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	$10.00 to $10.50
Heavy melting steel, railroad or equivalent	11.00 to 11.75
Rails for rolling	12.50 to 13.00
Relaying rails, nominal	22.00 to 23.00
Steel car axles	17.50 to 18.00
Iron car axles	22.50 to 23.00
No. 1 railroad wrought	12.50 to 13.00
Forge fire	9.50 to 10.00
No. 1 yard wrought, long	12.00 to 12.50
Cast borings (steel mill)	8.00 to 8.50
Cast borings (chemical)	13.00 to 13.50
Machine shop turnings	8.00 to 8.50
Mixed borings and turnings	8.00 to 9.00
Iron and steel pipe (1 in. diam., not under 2 ft. long)	10.75 to 11.25
Stove plate	8.75 to 10.75
Locomotive grate bars	10.50 to 11.00
Malleable cast (railroad)	13.00 to 13.50
Cast iron car wheels	13.00 to 13.50
No. 1 heavy breakable cast	12.00 to 12.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$15.00 to $15.50
No. 1 heavy cast (columns, building material, etc.), cupola size	13.00 to 13.50
No. 2 cast (radiators, cast boilers, etc.)	12.00 to 12.50

Cincinnati

Increased Volume of Pig Iron Sold but Northern Product Drops 50c.

CINCINNATI, May 19.—Sales of Northern pig iron during the past week have brought out further price reductions. The prevailing quotation ranges from $19 to $19.50, Ironton. The volume of sales of both Northern and Southern iron shows a substantial increase. Alabama iron is more active and several sizable orders have been booked at $20, Birmingham. Several furnaces, however, continue to ask $21 to $22, Birmingham. Dealers are asking $18.50, Birmingham basis, for Tennessee iron, but the majority of sales are being made at $18. Most of the inquiries are for third quarter shipment, although dealers are moving a fair volume of iron for immediate delivery. Sales made in the past week include the following: 1000 tons of silvery to a Michigan melter; 1000 tons of malleable to the Columbus Malleable Iron Co., Columbus; 500 tons of Northern foundry to Springfield, Ohio; 400 tons of malleable to a northern Ohio consumer; 350 tons of silvery to a Detroit melter; 300 tons of low phosphorus iron to a consumer in the Birmingham district; 200 tons of Southern to the Henry Vogt Machine Co., Louisville; 200 tons of Southern to the Elmwood Castings Co., Elmwood, Ohio; 200 tons of Northern foundry to central Ohio; 100 tons of Northern foundry to a Springfield, Ohio, melter and a like amount to a Dayton melter; and 100 tons of silvery to Sidney, Ohio. Inquiries have been received from a Michigan melter for 500 tons of silvery and the Lenoir Car Works, Lenoir City, Tenn., is asking for the same tonnage of Southern iron. Other inquiries include 500 tons of silvery for Toledo, Ohio; 200 tons of Southern for the Advance Stove Co., Evansville, Ind.; 100 tons of Northern foundry for Marion, Ohio; 200 tons of Northern foundry for Anderson, Ind.; and 200 tons of Northern foundry for a St. Louis melter for shipment to southern Illinois.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base)	$24.05 to $25.05
Alabama fdy., sil. 2.25 to 2.75	24.55 to 25.55
Tennessee fdy., sil. 1.75 to 2.25	22.05
Southern Ohio silvery, 8 per cent	28.77
Southern Ohio fdy., sil. 1.75 to 2.25	21.27 to 21.77
Southern Ohio, basic (nominal)	22.27
Southern Ohio malleable	22.27

Fluorspar.—A Detroit consumer has an inquiry out of 150 tons for lump fluospar. A local dealer sold 150 tons of ferrophosphorus to an Ohio consumer.

Structural Steel.—Increased activity is apparent. The contract for the Federal Land Bank, Louisville, Ky., 250 tons, has been awarded to the Snead Architectural Iron Works Co. No other sizable awards were made. Numerous jobs, however, involving from 25 to 75 tons are reported by local fabricators. Pending business has increased in the last 10 days. Bids on the new Masonic Temple, New Orleans, La., 2000 tons are now in. The U. S. Engineers Office at Louisville, Ky., will shortly make an award for Ohio River Lock No. 53, calling for about 250 tons. Decision on the Third National Bank, Dayton, Ohio, 1500 tons, is expected within the next week. Fabricators are bidding on a number of school and church jobs in this vicinity.

Reinforcing Bars.—Business has slowed up somewhat in the past two weeks. The only award of consequence is that of the Norwood View School, about 100 tons, to the Pollak Steel Co. Several jobs totaling small tonnages have been let recently. Inquiries are not as numerous as they were. An award on the new building for Mills Brothers, 250 tons, is anticipated shortly. No change in quotations is reported. New billets are selling at 2c. to 2.10c., mill. Rail steel is bringing 1.90c., mill.

Sheets.—The past week has brought an increase in sales but no improvement in prices. Several sellers state that their volume of orders during May shows a satisfactory increase over April and also an increase over the corresponding period last year. Buyers are hesitant about placing business too far in advance and are buying only for immediate needs. Mills are reported to be holding up to production levels that have prevailed for several months. Sales of black sheets have been made at 3.20c., Pittsburgh, although several large sellers refuse to take orders at less than 3.30c. Quotations of 4.25c., Pittsburgh, have been brought out in competitive bidding for business on galvanized sheets, but here again certain sellers hold to a price of 4.40c. and, consequently, are losing considerable business. Price slashing has not been indulged in to such an extent in blue annealed, which is commanding a price of 2.40c., Pittsburgh. Auto sheet quotations have also held up fairly well, the prevailing figure being 4.40c., Pittsburgh. Sellers believe that consumers will increase their purchases in the next month.

Bars, Shapes and Plates.—The outlook is gradually more encouraging. Sales are slowly improving and inquiries are better. One important company reports that its volume of business in the last six days was the largest in several months. The market for bars is in good condition and numerous sales at 2.10c., Pittsburgh, have been made. Sales of the larger tonnages, however, continue to be made at 2c. Sales of shapes and plates to fabricators in this territory have been fairly good and here again the 2c. to 2.10c. price range prevails. Sellers are stiffening somewhat on quotations and are attempting to strengthen the latter price. Buying is confined principally to business calling for speedy delivery.

Warehouse Business.—Decreased sales are reported by many dealers who state that business this month is not measuring up to that of April. The cautious buying policy of consumers has resulted in purchases being made only for immediate needs. Sales of structural steel reveal an increase of about 20 per cent over the corresponding period last year, according to several large dealers. Orders for shapes and plates show a decrease of about 10 per cent as compared with 1924. Sales of cold-rolled steel to the automotive industry have maintained a good standard. Orders for cold-rolled products from other sources are scarce. There has been a slight reduction in the price of common wire nails, the prevailing price being $3.15 per keg base. Otherwise, prices remain the same.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4.35c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled squares, 4.55c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, 4.60c.; No. 28 galvanized sheets, 5.75c.; No. 9 annealed wire, $3.25 per 100 lb.; common wire nails, $3.15 per keg base; cement coated nails, $2.65 per keg; chain, $7.55 per 100 lb. base; large round head rivets, $3.75 base; small rivets, 65 per cent off list. Boiler tubes, prices net per 100 ft., lap welded steel tubes, 2-in., $18; 4-in., $38; seamless, 2-in., $19; 4-in., $39.

Wire Products.—Orders for wire products still remain unsatisfactory. The past 10 days has brought an increase in sales, but the improvement does not justify optimism. Consumers are content to let their stocks stay as low as possible and to rely upon mills for quick shipment if an emergency arises. Jobbers state that their business has been only fair. Sellers are satisfied that sales will increase slowly in the next few weeks. Prices are steady at 2.75c., Pittsburgh, for nails and 2.50c., Pittsburgh, for plain wire. Mills in this territory are reported to be running about 80 per cent of capacity.

Coke.—The coke market displays slightly increased activity. Specifications for foundry coke are running considerably ahead of last month's volume. Increased sales of New River coke are reported by several dealers. An Ohio consumer is inquiring for 1500 tons of foundry coke.

Old Material.—Sluggishness still marks the scrap market. Mills are taking shipments on contract, but continue to postpone further purchases. There has

been little buying to test quotations which show only slight changes.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel	$13.00 to $13.50
Scrap rails for melting	13.50 to 14.00
Short rails	17.50 to 18.00
Relaying rails	28.00 to 28.50
Rails for rolling	15.00 to 15.50
Old car wheels	14.00 to 14.50
No. 1 locomotive tires	16.50 to 17.00
Railroad malleable	16.00 to 16.50
Agricultural malleable	14.50 to 15.00
Loose sheet clippings	10.00 to 10.50
Champion bundled sheets	12.00 to 12.50
Per Net Ton	
Cast iron borings	8.50 to 9.00
Machine shop turnings	7.50 to 8.00
No. 1 machinery cast	17.50 to 18.00
No. 1 railroad cast	15.00 to 15.50
Iron axles	22.00 to 22.50
No. 1 railroad wrought	11.00 to 11.50
Pipes and flues	7.50 to 8.50
No. 1 busheling	9.50 to 10.00
Mixed busheling	8.50 to 9.00
Burnt cast	9.50 to 10.00
Stove plate	10.00 to 10.50
Brake shoes	11.00 to 11.50

San Francisco

Prices Weaker—Inquiries Increase—Buying Slightly Stronger

SAN FRANCISCO, May 16 (*By Air Mail*).—Several fresh inquiries and the closing of a fair volume of business during the past week have strengthened indications which suggest that a more liberal buying tendency is slowly developing. This development, however, is accompanied by a steady weakening of prices, particularly in plates, sheets and shapes. The Southern Pacific Co. has placed its order for 100 tons of blooms with two unnamed mills, and has bought 500 tons of foundry iron. About 1000 tons of Indian foundry iron was sold in the Pacific Northwest. Building activity on the Pacific Coast during April reached the largest total ever recorded. The 80 cities reporting show a total in building permits 17 per cent more than April, 1924. San Francisco made a gain of 19 per cent.

Pig Iron.—About 1000 tons of Indian foundry iron was sold recently in the Pacific Northwest at about $25.50, duty paid, f.o.b. cars, Seattle, Wash. The Southern Pacific Co. has placed 500 tons of foundry iron with an unnamed domestic producer. A local malleable castings company is inquiring for 500 tons of malleable iron. Offers of German foundry iron are still being made for late June or early July shipment at $26.50, duty paid, f.o.b. cars, San Francisco. Small consistent sales of Utah iron continue, and a number of large users have contracted for their third quarter requirements.

*Utah basic	$27.25 to $28.25
*Utah foundry, sil. 1.75 to 2.25	27.50 to 28.50
**Scotch foundry	28.00 to 30.00
**English foundry	27.00 to 28.00
**Belgian foundry	26.00
**Dutch foundry	25.25 to 26.50
**Indian foundry	26.50
**German foundry	26.50
*Birmingham, Ala., foundry, sil. 2.75 to 3.25	31.00 to 32.00

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

Shapes.—Business closed, during the past week, amounted to about 2780 tons. Fresh inquiries call for 2880 tons. Bids will be closed June 9 by the Washington State Highway Committee, Olympia, Wash., for the construction of four Everett-Marysville bridges, taking about 2000 tons of structural steel and about 629 tons of reinforcing bars. The Emsco Steel Products Co., Los Angeles, has placed an order for 1200 tons, for stock, with an Eastern mill. Prices are weaker. A quotation of 2.45c., c.i.f. Coast ports, was made during the past week, and rumors persist that 2.40c. is now possible for large tonnages. Some of the Eastern mill representatives, however, are still closing sales at 2.50c. Present quotations, therefore, range from 2.45c. to 2.50c., c.i.f. Coast ports, with 2.40c. as an outside possibility for desirable tonnages. Heavy foreign material is unchanged at 2.20c., c.i.f., duty paid, at incoming dock.

Plates.—Price testing and inquiries have apparently brought the minimum quotation in plates to 2.40c., c.i.f. Coast ports, although insistent rumors more than indicate that less than 2.40c. is not impossible for desirable tonnages. Some of the larger sellers are still maintaining quotations at 2.45c., but no large tonnages are known to have been placed at that figure, primarily, because there has been nothing of size to place. The only award of any consequence was placed by the Standard Oil Co. for 100 tons, which was split between two Eastern mills. The largest inquiry of the week was from the East Bay Municipal Utility District, Oakland, which is inquiring for 15,000 tons for the Mokelumne River pipe line from the San Joaquin River to the San Pablo reservoir. Bids may be called for in about 30 days. New inquiries call for a total of 15,740 tons.

Sheets.—No business of any size is being done at present, and as a result some sellers are making lower quotations. In blue annealed sheets, 2.40c., Pittsburgh base, has been quoted, and in galvanized sheets less than 4.25c. has been named. The prevailing quotations are: Blue annealed sheets, 2.40c. to 2.50c., base, Pittsburgh; black sheets, 3.25c. to 3.30c., and galvanized sheets, 4.25c. to 4.40c.

Warehouse Business.—Jobbers' sales so far this month have been ahead of the first fifteen days of April. Improved demand is noted in plates, sheets and small shapes. Cement coated nails have been reduced by some of the local jobbers $5 a ton, or from $3.25, base, per 100 lb. to $3. Wire nails in Los Angeles have been reduced from $4.10, base, per 100 lb. to $4. There have been no other specific price changes, although there are persistent rumors that price shading is common where any large order is involved.

Merchant bars, $3.30 base per 100 lb.; merchant bars, ⅜ in and under, rounds, squares and flats, $3.80 base, per 100 lb.; soft steel bands, $4.15 base, per 100 lb.; angles, ⅛ in. and larger x 1½ in. to 2¾ in., inc., $3.30 base, per 100 lb.; channels and tees, ¾ in. to 2¾ in., inc., $3.90 base, per 100 lb.; angles, beams and channels, 3 in. and larger, $3.15 base, per 100 lb.; tees, 3 in. and larger, $3.30 base, per 100 lb.; universal mill plates, ¼ in. and heavier, stock lengths, $3.30 base, per 100 lb.; spring steel, ¼ in. and thicker, $6.30 base, per 100 lb.; wire nails, $4 base, per 100 lb.; cement coated nails, $3 base, per 100 lb.; No. 10 blue annealed sheets, $4.20 per 100 lb.; No. 28 galvanized sheets, $6.25 per 100 lb.; No. 28 black sheets, $5.25 per 100 lb.

Bars.—A number of fresh inquiries have developed, but lettings in reinforcing jobs during the week involved only 250 tons. Prices are unchanged, reinforcing bars remain at 3.35c., base, carload, out of stock, and 3.80c., base., l.c.l. Soft steel bars are 2.55c. to 2.60c., base, from local mills. The only reinforcing bar lettings during the week were: Pantages Theater, San Francisco, 150 tons, to Badt-Falk & Co., and a garage on Fourth between Mission and Howard Streets, San Francisco, 100 tons, to Gunn, Carle & Co.

Cast Iron Pipe.—Prices are unchanged, $52 to $53, base, delivered in the San Francisco district. Only one award of more than 100 tons was made during the week, Santa Barbara, 481 tons, to U. S. Cast Iron Pipe & Foundry Co. Several jobs are pending and bids have closed on several others.

Scrap Remains Firm in Detroit

DETROIT, May 19.—Automobile production continues at a high rate with stove, furnace and radiator manufacturers maintaining a basis of 90 per cent capacity. Malleable plants show an increase for the second quarter. Melters are covering on pig iron to fill orders on hand, and there is no speculation in any material buying.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	$13.00 to $14.00
Borings and short turnings	10.25 to 10.75
Long turnings	9.75 to 10.25
No. 1 machinery cast	15.00 to 16.00
Automobile cast	20.00 to 21.00
Hydraulic compressed	11.25 to 11.75
Stove plate	14.50 to 15.50
No. 1 busheling	11.00 to 12.00
Sheet clippings	8.50 to 9.25
Flashings	10.00 to 11.00

Buffalo

Signs of Strength in Pig Iron and Scrap —Finished Steel Quiet

BUFFALO, May 19.—A stiffening tendency is noticed in the price attitude. Furnaces with a disposition to quote stronger prices say they have not run into $18.50 competition this week. Some furnaces are quoting $19.50 for 2X, 2.25 to 2.75 per cent silicon, and some will sell 2X for $19. One interest announces rigid differentials will be maintained, the range being $19 to $20.50. Business offered at $18.50 is being rejected Inquiry was less than the previous week, only about 10,000 tons being under negotiation. A 1000-ton inquiry for foundry came from outside the State; other foundry inquiries were two for 450 tons each and one for 500 tons. The General Electric Co. sought 2000 tons in scattered lots.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sil. 1.75 to 2.25.....	$19.00
No. 2X foundry, sil. 2.25 to 2.75..	$19.00 to 19.50
No. 1 foundry, sil. 2.75 to 3.25...	19.50 to 20.50
Malleable, sil. up to 2.25.....	19.00
Basic	19.00
Lake Superior charcoal.....	29.28

Finished Iron and Steel.—The week has been quiet so far as bookings are concerned. The price for bars and shapes remains as before, 2.265c. delivered, Buffalo, on most lots, with 2.365c. on exceptional lots. Reinforcing bars business is quieter than it should be for the season. Mill operation ranges between 60 and 65 per cent.

Warehouse prices are being quoted as follows: Steel bars, 3.25c.; steel shapes, 3.35c.; steel plates, 3.35c.; No. 10 blue annealed sheets, 4.05c.; No. 28 black sheets, 4.75c.; No. 28 galvanized, 5.80c.; cold rolled shapes, 4.65c.; cold rolled rounds, 4.20c.; wire nails, 4.00c.; black wire, 4.05c.

Old Material.—The situation is better with reports of buying in the Valley and in Pittsburgh at $17 and $17.50. The general impression is that the market is scraping bottom and that prices will probably not go much lower. Enough buying is going on to keep the market firm at present prices, and it is almost impossible to buy a large tonnage at the quoted prices. Dealers are laying in material for yard purposes without attempting to dispose of it right away. Some sales of heavy melting steel, strictly No. 1 grade, are being made at $16, possibly 3000 or 4000 tons having been sold this week at about that figure. One mill would probably pay $16.50 for a sizable tonnage. A little blast furnace scrap, short turnings and cast iron borings is being moved at $11.50.

We quote prices f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel	$16.00 to $16.50
Low phosphorus	18.50 to 19.50
No. 1 railroad wrought	14.00 to 14.50
Car wheels	15.00 to 16.00
Machine shop turnings	10.00 to 10.50
Cast iron borings	10.00 to 10.50
No. 1 busheling	15.50 to 16.00
Stove plate	14.00 to 14.50
Grate bars	12.50 to 13.00
Bundled sheets	11.50 to 12.00
Hydraulic compressed	14.50 to 15.50
No. 1 machinery cast	16.50 to 17.00
Railroad malleable	17.00 to 17.50
No. 1 cast scrap	16.50 to 17.00
Iron axles	26.00 to 27.00
Steel axles	17.00 to 17.50

New Cement Plant for California

SAN FRANCISCO, May 15.—(*By Air Mail*)—Plans have been completed and preliminary work started by the Calaveras Cement Co., 315 Montgomery Street, San Francisco, for the construction of a 4000-bbl. daily capacity cement plant, to be located at Kentucky House, Calaveras County, about 1½ miles from San Andreas, Cal. Wallace Mein is president of the company, G. B. Poor is consulting engineer and superintendent of construction and H. A. Henry is assistant superintendent.

Surveys have been made and plans are being completed by the engineering department of the Southern Pacific Co. for the construction of about 11 miles of railroad from Valley Springs to the proposed plant.

Boston

Two Large Lots of Pig Iron Sold but Buying Not Active

BOSTON, May 19.—A Massachusetts heater manufacfacturer is reported to have bought 7000 to 8000 tons No. 2 plain, and an eastern Massachusetts foundry 1500 tons No. 2X and 500 tons No. 1X the past week. Otherwise buying is less active. Foundries in general apparently are working back to the old-time method of buying on a 90-day supply basis. Details as to the two large lots sold are guarded. It is reported, however, that the 7000 to 8000-ton lot was placed with one Buffalo furnace, 2000 tons for second quarter shipment and the remainder for third quarter, at $18.50 furnace. The other lot is believed to have been placed with a Buffalo district furnace, the No. 2X at $19 furnace and the No. 1X at the same price. Buffalo furnaces in general openly quote second quarter $19 for No. 2 plain, furnace, $19.50 for No. 2X and $20 for No. 1X. For third quarter $19.50 for No. 2 plain, $20 for No. 2X and $20.50 to $21 for No. 1X. The blowing out of an eastern Pennsylvania furnace active in this territory has had no visible influence on prices, the base price remaining $20 to $21 furnace. Virginia and Alabama irons are hardly a market factor today. Some business is passing in India iron to arrive in June at a delivered price in the eastern part of New England approximating that of Buffalo iron. During the past week 1781 tons of Dutch and 101 tons of German iron were landed in Boston.

We quote delivery prices on the basis of the latest sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25....	$24.15 to $24.65
East. Penn., sil. 2.25 to 2.75....	24.65 to 25.15
Buffalo, sil. 1.75 to 2.25.....	23.91 to 24.91
Buffalo, sil. 2.25 to 2.75.....	23.91 to 25.40
Virginia, sil. 1.75 to 2.25.....	28.67 to 29.42
Virginia, sil. 2.25 to 2.75.....	29.17 to 29.92
Alabama, sil. 1.75 to 2.25.....	31.60
Alabama, sil. 2.25 to 2.75.....	32.10

Cast Iron Pipe.—Newton, Mass., has awarded 9600 ft. of 20-in. pipe to the Donaldson Iron Co., the lowest American bidder. French pipe interests were the low bidders, but a hitch in the matter of deliveries made it imperative to award the business to American pipe makers. At least 1000 tons of pipe was placed here the past week at private sales. American pipe makers continue to make concessions on large pipe, and for the first time this season are cutting prices on small sizes.

Finished Material.—Demand is, perhaps, a little more active, but individual orders for bars and plates in most cases are small. Indications are that some large tonnages for structural shapes will be placed here within a short time, but at the moment business is limited. The Bethlehem Steel Co. was the low bidder on 165 tons steel beams required by the Transit Department here. The Osgood-Bradley Car Co., Worcester, Mass., has been awarded a contract for upward of 100 electric cars for Pittsburgh. The order insures capacity plant operations until autumn.

Coke.—Both the New England Coal & Coke Co. and the Providence Gas Co. have opened their books for last half contracts. Between 80 and 90 per cent of those foundries having contracts the first half with these companies have made new ones. The amount of coke contracted for to date shows little variation from the aggregate tonnage contracted for the first six months of this year. Specifications against first half contracts are holding up well and the consensus of opinion among pig iron houses is that May tonnages will slightly exceed April. Both of the New England producers of by-product foundry coke are doing current business on a basis of $11.50 a ton delivered in New England. Last half contracts are on a sliding price scale basis.

Old Material.—The movement of old material in this market is, perhaps, a little more active. The purchase of some 2000 tons of material, largely heavy melting steel and heavy cast by a Connecticut plant and of heavy melting steel by a Massachusetts plant on a basis of $11 on cars shipping point were the contribut-

ing factors in any improvement there might be in business, although purchases of pipe and steel and forged flashings for a Pennsylvania steel mill, and of shafting for a New England plant were market factors. Pipe values have taken quite a wide range, with sales at $9.50 on cars shipping point, $9.75, $10, $10.25, and in at least one instance, $10.50. For New England consumption there have been sales of textile cast at $20 and $20.50, and of No. 1 machinery cast at $19.50 and $20. Those materials for which there has been a real demand are 50c. a ton higher on the average.

The following prices are for gross ton lots delivered consuming points:

Textile cast	$20.00 to $20.50
No. 1 machinery cast	19.50 to 20.00
No. 2 machinery cast	16.50 to 17.50
Stove plates	13.00 to 13.50
Railroad malleable	19.00 to 20.00

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$10.50 to $11.00
No. 1 railroad wrought	13.00 to 13.50
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1-in. in diam., over 2 ft. long)	9.75 to 10.25
Machine shop turnings	7.00 to 7.50
Cast iron borings, chemical	10.00 to 10.50
Cast iron borings, rolling mill	7.50 to 8.00
Blast furnace borings and turnings	6.50 to 7.00
Forged scrap	9.00 to 9.50
Bundled skeleton, long	7.00 to 7.50
Bundled skeleton, short	9.00 to 9.50
Forged flashings	9.00 to 9.50
Shaftings	16.50 to 17.00
Street car axles	16.50 to 17.00
Rails for rerolling	11.50 to 12.00
Scrap rails	10.50 to 11.00

St. Louis

Larger Demand for Pig Iron—Scrap Market Firmer

ST. LOUIS, May 19.—Some revival of interest on the part of melters has been noted as a result of the recent decline in pig iron prices. A number of inquiries, both for basic and foundry iron, have come to light, and aggregate actual sales are the largest in some time. Most of the buying was for third quarter delivery, though there was also a fair sprinkling for prompt shipment. The St. Louis Coke & Iron Co. disposed of 3500 tons of foundry iron, the largest single lot being 2500 tons to a local wheel maker. An East Side job foundry purchased 700 tons, 400 of Northern and 300 of Alabama iron. Other sales reported totaled close to 2500 tons, and were well distributed among all classes of users. Quoted prices were unchanged, but there is shading on all sides to get business.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices, $2.16 freight from Chicago, $3.28 from Florence and Sheffield (rail and water), $5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City.

Northern fdy., sil. 1.75 to 2.25	$23.16 to $24.16
Northern malleable, sil. 1.75 to 2.25	23.16 to 24.16
Basic	24.16 to 24.66
Alabama fdy., sil. 1.75 to 2.25 (rail)	25.17
Alabama fdy., sil. 1.75 to 2.25 (rail and water)	23.28
Tennessee fdy., sil. 1.75 to 2.25	21.78
Granite City iron, sil. 1.75 to 2.25	23.31 to 23.31

Finished Iron and Steel.—Buying by the railroads is disappointing, the disposition being to take nothing which is not absolutely necessary. In the structural steel market there are a number of large enterprises pending, but none has reached the point where bids are being taken. Fabricators report a good volume of small orders and are able to keep their plants in operation. Small lot orders continue to feature the reinforcing concrete situation. The leading producer of this material continues to operate at full capacity.

For stock out of warehouse we quote: Soft steel bars, 3.15c. per lb.; iron bars, 3.15c.; structural shapes, 3.25c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, cold rolled, one pass, 4.80c.; galvanized sheets, No. 28, 5.80c.; blank corrugated sheets, 4.95c.; galvanized, 5.95c.; cold-rolled rounds, shafting and screw stock, 3.95c.; structural rivets, 3.65c.; boiler rivets, 3.85c.; tank rivets, $\frac{7}{8}$ in. diameter and smaller, 70 per cent off list; machine bolts, 55 per cent; carriage bolts, 50 per cent; lag screws, 60 per cent; hot pressed nuts, squares, $3.50; hexagons, blank or tapped, $4 off list.

Coke.—Shipments of industrial coke on contracts continues heavy, but new business is slow to arrive. The recent contraction in melt at foundries is reflected in a falling off in purchasing of metallurgical coke. Small lots for prompt delivery is the only activity in this grade. Domestic coke is lifeless. Prices are unchanged on all grades and descriptions.

Old Material.—A somewhat more optimistic feeling has developed in scrap iron and steel during the past week or ten days, but thus far the only concrete manifestation of this has been in a halt in the downturn in prices, and slightly more difficulty in purchasing. Yardmen are hunting material to lay down. Stocks are generally light and, with nothing coming in from the country, a scarcity is looked for before the end of the summer. New lists before the trade included the following: Texas & Pacific, 1890 tons; Chicago Belt, 10 cars; International and Great Northern and Coast Lines, 1400 tons; Rock Island, 5000 tons, and Frisco, 1200 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton

Iron rails	$12.00 to $12.50
Rails for rolling	16.00 to 16.50
Steel rails less than 3 ft.	17.00 to 17.50
Relaying rails, 60 lb. and under	25.00 to 26.00
Relaying rails, 70 lb. and under	30.00 to 30.50
Cast iron car wheels	15.50 to 16.00
Heavy melting steel	14.00 to 14.50
Heavy shoveling steel	14.00 to 14.50
Frogs, switches and guards cut apart	14.50 to 15.00
Railroad springs	17.50 to 18.00
Heavy axles and tire turnings	11.25 to 11.75
No. 1 locomotive tires	16.50 to 17.00

Per Net Ton

Steel angle bars	13.50 to 14.00
Steel car axles	15.50 to 16.00
Iron car axles	24.00 to 24.50
Wrought iron bars and transoms	18.00 to 18.50
No. 1 railroad wrought	12.50 to 13.00
No. 2 railroad wrought	12.50 to 13.00
Cast iron borings	10.00 to 10.50
No. 1 busheling	11.00 to 11.50
No. 1 railroad cast	15.00 to 15.50
No. 1 machinery cast	17.50 to 18.00
Railroad malleable	12.75 to 13.25
Machine shop turnings	7.00 to 7.50
Champion bundled sheets	8.00 to 8.50

Birmingham

Cast Iron Pipe Active—Little Pig Iron Leaving Territory

BIRMINGHAM, May 19.—Deflection in either production or quotation base appearing imminent, possibilities present themselves of a change of conditions of the Southern pig iron market. Two blast furnaces have been blown out this month and two others were scheduled, but a slight improvement in the tone delayed this. A lower price base is anticipated now, $20 stated to be the quotation. Whether this will bring buying is problematical. The new quotation, not yet authorized, apparently will be announced. The unfilled tonnage with furnace companies in this district shows decided reduction recently and very little iron is still due consumers. Buying on the part of the larger and steadier consumers will be a necessity before long. Surplus piles of iron are somewhat heavier than a month ago. Very little Southern iron is leaving the territory, the home consumption being practically the entire sale now. Inquiries for iron were a little more persistent the past week but the sales have not aggregated any more than since the deadlock started in, consumers purchasing sufficient for immediate needs only. At the close of the past week the pig iron quotations were stated on a $22 per ton base, for No. 2 foundry.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	$20.00
No. 1 foundry, 2.25 to 2.75 sil.	20.50
Basic	20.00
Charcoal, warm blast	30.00

Cast Iron Pipe.—Activity at the several plants producing cast iron pressure pipe continues. Despite the declaration that foreign-made pipe is giving some competition, there is a large output and the pipe is being shipped as quickly as manufactured. Pipe quotations are still given on the $40 per ton base, 6-in. and over. Shipments of pipe from the Birmingham district are in

every direction. Recent lettings call for a considerable tonnage and indications are that operations will be kept steady indefinitely. The pressure pipe makers are the largest consumers of pig iron in the district.

Finished Steel.—Steady production of steel and steady output of finished products bring conclusion that the steel mart is still good. Steel Corporation plants have shown little, if any, hesitation of late. The independent, Gulf States Steel Co., has three of its six open-hearth furnaces in operation, with finishing departments going well. Steel prices in this district show no change. Soft steel bars are given at 2.15c. to 2.25c., Birmingham.

Coke.—The coke market is holding up well. The Sloss-Sheffield Steel & Iron Co. has blown out its 200 beehive coke ovens. All by-product coke ovens in this district are at full pace. Independent coke companies are asking $5 per ton for their product and there is a good demand.

Old Material.—The scrap market shows no change, is rather slow and the quotations continue low. The fact that the Tennessee Coal, Iron & Railroad Co. has been in the open market and purchased some old steel material has encouraged the business. Reports have been current that Hickman, Williams & Co. may come into this district with a yard. The quotations for old material remain about what they have been for several weeks.

We quote per gross ton, f.o.b. Birmingham, district yards, as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	13.00 to 14.00
Railroad wrought	12.00 to 13.00
Steel axles	17.00 to 18.00
Iron axles	18.00 to 19.00
Steel rails	13.00 to 14.00
No. 1 cast	16.50 to 17.00
Tramcar wheels	16.50 to 17.00
Car wheels	15.00 to 16.00
Stove plate	13.00 to 14.00
Machine shop turnings	7.00 to 8.00
Cast iron borings	8.00 to 9.00
Rails for rolling	16.50 to 17.00

Cleveland

Manufacturing Consumers Using More Steel—Buying Movement in Iron

CLEVELAND, May 19.—Manufacturing plants in some metal working lines have increased operations and are using more steel. Sentiment among buyers and sellers shows an improvement and some of the mills report an increase in orders. Good specifications on contracts for steel bars are being issued and a few inquiries have come out for extended future deliveries although the attitude of most buyers still is to order material as needed. The automotive industry as yet shows no signs of slackening its record production pace and agricultural implement manufacturers are generally operating their plants at full capacity. The market is firm at 2c. for steel bars and structural material with small lots going at 2.10c. On plates the same spread in prices generally prevails. Efforts to break the 2c. plate price as a rule have failed, although 1.90c. has been made in exceptional cases but not by the larger mills. Some new inquiries for Lake boats came out during the week. The several Lake vessels that are now pending will require 10,000 to 15,000 tons of steel. The Humble Refining Co. has placed soaking pit drums requiring 850 tons of plates with the Henry Vogt Machine Co., Louisville, Ky. The steel will be furnished by an Eastern mill.

Pig Iron.—The buying movement has gained impetus and sales aggregating about 85,000 tons were made during the week by Cleveland interests. This business was entirely in foundry and malleable grades. While some of the contracts were for the last half, the most of the business was for the third quarter although it included in many cases some iron for shipment during the remainder of the second quarter. Some producers decline to sell beyond the third quarter. While there were orders for lots of 4000 to 5000 tons, the average size of orders was not so large as during some previous buying movements. Sales were well scattered between various industries but included round lots from automobile, stove, furnace and radiator interests. The United States Radiator Corporation purchased 4000 tons from a Lake furnace and is understood to have purchased additional iron from other sources. A Columbus melter purchased 1500 tons of malleable iron, partly from a Columbus furnace; Springfield and Galion consumers, 500 tons of foundry iron each; Erie, Pa., consumers, a 1000-ton and two 500-ton lots, and an Indiana foundry, 1500 tons of foundry and malleable iron. A heavy volume of inquiry is pending, one seller alone having active inquiries for 25,000 tons. The General Electric Co. is inquiring for several thousand tons for all its plants, including 800 tons in various grades for Erie. A Dayton foundry is inquiring for 1500 tons of foundry iron. There is very little buying in Cleveland, where the larger consumers are still carrying over considerable iron. Neither is there much activity in northern Ohio. While the market lacks strength, there is little change in the price situation. The market appears to be holding fairly well to the $19 base in the Valley district, although this price has been shaded 25c. a ton and there are unconfirmed reports of an $18.50 price. Some of the Lake furnaces are not quite so firm on prices as a week ago because of the price situation in the Valley district. Where Valley competition does not have to be met, quotations range from $19.50 to $20. Cleveland furnaces are on a $19 base for out of town shipments and $20 for Cleveland delivery.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 from Birmingham:

Basic, Valley furnace	$18.50
N'th'n No. 2 fdy., sil. 1.75 to 2.25	20.50
Southern fdy., sil. 1.75 to 2.25	$24.50 to 26.01
Malleable	20.50
Ohio silvery, 8 per cent	29.02 to 29.52
Standard low phos., Valley furnace	28.50

Semi-Finished Steel.—Efforts on the part of sheet makers to force the price of sheet bars down $2 a ton to $35 a ton, Youngstown, have finally succeeded. Small lot sales have been made at the reduced price, which is being quoted by at least two mills. Buyers have been holding off waiting for a reduction and now it is expected that there will be a more active demand. Large billets and slabs have declined 50c. to $35, Youngstown.

Bolts, Nuts and Rivets.—Bolt and nut specifications continue good but not a great deal of new business is coming out and makers are unable to accumulate much of a backlog. The demand for small rivets is fairly heavy but there is still an irregularity in prices. Some of the manufacturers are trying to hold to 70 and 10 per cent off list but good lots are bringing out a price of 70, 10 and 5 per cent.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 4.25c.; No. 28 galvanized sheets, 5.35c.; No. 10 blue annealed sheets, 3.25c. to 3.50c.; cold-rolled rounds, 4c.; flats, squares and hexagons, 4.50c.; hoops and bands, 3.85c.; No. 9 annealed wire, $3.05 per 100 lb.; No. 9 galvanized wire, $3.50 per 100 lb.; common wire nails, $3.15 base per 100 lb.

Sheets.—New business is coming out in moderate volume. Some mills have good order books and others need tonnage for early rolling. Prices show no further decline, but with keen competition for business there is more of a disposition on the part of some mills to quote on a Youngstown instead of a Pittsburgh base. Black sheets range from 3.20c. to 3.30c., blue annealed from 2.40c. to 2.50c. and galvanized from 4.30c. to 4.50c.

Strip Steel.—The demand is light. While 2.40c. for narrow and 2.20c. for wide material are being generally maintained, the market seems to lack elements of strength because of the light volume of business. Cold rolled strip steel is irregular with a spread of 3.75c. to 4c.

Reinforcing Bars.—New inquiries include 2000 tons for warehouses in Detroit. Some business outside of Cleveland is being taken at 1.90c., Pittsburgh, for soft steel bars and locally the market is 2.10c., Cleveland. Rail steel bars range from 1.80c. to 1.90c.

Iron Ore.—Quotations on Lake Superior ore of 25c. or more a ton below the schedule have appeared in

spite of the fact that it was the general opinion that with the sharp price reduction this year regular prices would be maintained. A pending inquiry for 50,000 to 100,000 tons from a Pittsburgh district consumer brought the concession from one of the smaller mining companies.

Coke.—There is no change in the coke situation. Prices on standard brands of Connellsville foundry coke range from $4 to $4.50, although some of the special brands are held at $5.50.

Old Material.—The firmer tone that recently developed in the market as noted last week is still in evidence and prices have advanced on practically all grades. Heavy melting steel has been marked up 50c. a ton, borings and turnings 75c. and most other grades 25c. Following the round lot buying by local mills about ten days ago, the market has settled down to another inactive spell with purchases confined to dealers to fill old orders. Local dealers are paying $16 for heavy melting steel.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$16.00 to $16.25
Rails for rolling	15.75 to 16.25
Rails under 3 ft	18.00 to 18.25
Low phosphorus melting	18.50 to 18.75
Cast iron borings	13.00 to 13.25
Machine shop turnings	13.00 to 13.25
Mixed borings and short turnings	13.00 to 13.25
Compressed sheet steel	13.25 to 13.75
Railroad wrought	12.25 to 12.50
Railroad malleable	17.50 to 17.75
Light bundled sheet stampings	11.25 to 11.50
Steel axle turnings	14.75 to 15.00
No. 1 cast	17.25 to 17.75
No. 1 busheling	12.75 to 13.00
Drop forge flashings	11.25 to 11.75
Railroad grate bars	13.00 to 13.25
Stove plate	13.00 to 13.25
Pipes and flues	8.25 to 8.50

Philadelphia

Scrap Prices Advance Slightly and Pig Iron Shows Further Decline

PHILADELPHIA, May 19.—In some directions there has been a moderate gain in business in the past week. Two or three of the Eastern plate mills, which have had lean order books were able to put more tonnage on their books than has been the rule in the past several weeks. The Lukens Steel Co. will light two additional open-hearth furnaces and has been running its plate mills practically full for the past 10 days. Improvement is not general enough to warrant the conclusion that an expansion of demand is actually in process, but there are more favorable signs than was the case two or three weeks ago.

The decline in scrap prices has apparently run its course and there has been a slight rebound on some grades and better buying. Pig iron, however, has made a further recession of 50c. a ton, but the outlook is better for the sellers in that production has been decreased to an extent which promises to bring an early end to the downward movement of prices. Buyers seem to sense that pig iron is cheap at today's prices and there is a fair volume of inquiry.

Ferroalloys.—Resale lots of ferromanganese are still available, but there has been no inquiry to bring out quotations. Domestic producers and importers of British ferromanganese still quote $115, furnace or seaboard, with very little buying.

Pig-Iron.—Sales of foundry iron have been made within the past week at $20, furnace, for No. 2 plain and at $20.50 for No. 2X. These prices have not been made on all of the business that has been done, but have been effective particularly on sales to the New England and New York districts, where eastern Pennsylvania furnaces come more closely into competition with Buffalo furnaces. One furnace which recently went out of blast has only 9000 tons of iron for sale and is holding firmly to a minimum of $21. Quotations of other furnaces are frequently on the basis of $20.50 for No. 2 plain and $21 for No. 2X and these prices are shaded only when absolutely necessary. There are fewer anxious sellers and this fact, together with decreasing production, indicates that a firmer tone in the market is not far off. There are some good inquiries, notably one for 3500 tons of malleable iron from a New England foundry.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rate varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$20.76 to $21.63
East. Pa. No. 2X, 2.25 to 2.75 sil.	21.26 to 22.13
East. Pa. No. 1X	21.76 to 22.63
Virginia No. 2 plain, 1.75 to 2.25 sil.	28.67 to 29.17
Virginia No. 2X, 2.25 to 2.75 sil.	29.17 to 29.67
Basic delivery eastern Pa.	21.00 to 21.50
Gray forge	21.50 to 22.00
Malleable	21.50 to 22.50
Standard low phos. (f.o.b. furnace)	24.00 to 25.00
Copper bearing low phos. (f.o.b. furnace)	25.00 to 26.00

Billets.—Demand for billets is limited to occasional small lots, mostly forging quality. Rerolling billets are to be had at $35.50, Pittsburgh, with $5 extra for forging quality.

Plates.—Eastern mills have revised contracts to the basis of 1.90c., Pittsburgh, and this has brought in a fairly substantial increase in plate specifications. There has also been a moderate increase in orders aside from contract tonnage. The Lukens Steel Co. will put on two additional open-hearth furnaces, making six active, and is running its plate mills at almost full capacity. There is very little to indicate whether the expansion in demand is a temporary condition, but the feeling among producers is that a period of slightly better business is at hand. On domestic tonnage no shading of 1.90c. is reported, but on 1500 tons for tanks to be exported a price somewhere below 1.90c., Pittsburgh, was quoted by a mill outside of this territory. The order included some bars and structural shapes, on which the same low price was given. The Baldwin Locomotive Works has received an additional order from the Atlantic Coast Line for 25 engines.

Structural Shapes.—A local fabricator will fabricate 1400 tons for an addition to a sugar plant in Cuba. Other work taken in the past week is mostly in small tonnages, but there is a fair number of inquiries and the outlook for continued building activity appears good. Prices on fabricated steel are very low, competition being keen. Mills are endeavoring to get 2c., Pittsburgh, on plain material, but on attractive lots prices as low as 1.85c. have appeared.

Bars.—Although some mills are trying to get 2.10c., Pittsburgh, on lots up to a carload, this price is not a factor on lots of a carload or more, as several mills quote 2c. Demand for bars is at a fair rate, but most of the tonnage coming to the mills consists of specifications on contracts. Bar iron is unchanged at 2.22c., Philadelphia.

Sheets.—The blue annealed sheet mills of the Alan Wood Iron & Steel Co. at Conshohocken started up on Monday with almost a full crew. The mills have been idle since February, due to a strike. Sheet prices continue weak, but there are no further changes here. Blue annealed is selling freely at 2.40c., black at 3.20c. and galvanized at 4.30c., Pittsburgh base.

Warehouse Business.—There is cutting of prices among some of the warehouses and a price of 3c. on bars and small shapes has appeared, with corresponding reductions on related items. The usual quotation is 3.10c. We quote for local delivery as follows:

Soft steel bars and small shapes, 3.10c.; iron bars (except bands), 3.10c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ½ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates, ¼ in. and heavier, 3.10c.; tank steel plates, ⅜ in., 3.25c.; blue annealed steel sheets, No. 10 gage, 3.70c.; black sheets, No. 28 gage, 4.70c.; galvanized sheets, No. 28 gage, 5.85c.; square, twisted and deformed steel bars, 2.85c.; structural shapes, 3c. to 3.10c.; diamond pattern plates, ¼-in., 5.30c.; ⅜-in., 5.50c.; spring steel, 5c.; rounds and hexagons, cold-rolled steel, 4.15c.; squares and flats, cold-rolled steel, 4.65c.; steel hoops, 4.20c. base; steel bands, No. 12 gage to ⅞ in., inclusive, 3.95c.; rails, 3.20c.; tool steel, 8.50c.; Norway iron, 6.50c.

Imports.—Last week's imports at Philadelphia included 1007 tons of pig iron from British India, 720 tons from Germany and 800 from England; 8000 tons of iron ore from Algeria, 575 tons of ferromanganese from England, 1466 tons of manganese ore from British India, 628 tons of structural steel from Belgium.

Old Material.—The firmer undertone in the eastern scrap market, noted a week ago, has continued but without much progress so far as prices are concerned. A substantial tonnage of heavy melting steel was bought by an Eastern steel company at $15, delivered, and this is the identical amount paid on its two previous purchases. Another mill, buying a smaller tonnage, was obliged to pay $15.50. On the $15 steel orders outstanding brokers will not pay more than $14.50, and therefore we quote this grade from $14.50 to $15.50. There have been slight advances on some of the minor steel-making grades such as bundled sheets, stove plate and grate bars and machine shop turnings. Scrap dealers having stocks in their yards are more optimistic as to an upward turn in prices than are the brokers, who are in closer touch with the mills than the average yard dealer. The larger brokers are awaiting an increase in the buying of finished steel before making predictions of a marked improvement in scrap prices.

We quote for delivery consuming points in this district as follows:

No. 1 heavy melting steel	$14.50 to $15.50
Scrap rails	14.50 to 15.50
Steel rails for rolling	16.50 to 17.00
No. 1 low phos. heavy 0.04 and under	20.00 to 21.00
Couplers and knuckles	18.50 to 19.50
Rolled steel wheels	18.50 to 19.50
Cast-iron car wheels	17.00 to 17.50
No. 1 railroad wrought	17.50 to 18.00
No. 1 yard wrought	16.50 to 17.00
No. 1 forge fire	14.00 to 14.50
Bundled sheets (for steel works)	12.50
Mixed borings and turnings (for blast furnace use)	11.50 to 12.50
Machine shop turnings (for steel works use)	12.50
Machine shop turnings (for rolling mill use)	13.00
Heavy axle turnings (or equivalent)	14.00 to 15.00
Cast borings (for steel works and rolling mill)	12.50 to 13.00
Cast borings (for chemical plants)	15.00 to 15.50
No. 1 cast	17.00 to 17.50
Heavy breakable cast (for steel plants)	15.50 to 16.00
Railroad grate bars	13.00 to 13.50
Stove plate (for steel plant use)	13.00 to 13.50
Wrought iron and soft steel pipes and tubes (new specifications)	14.50 to 15.00
Shafting	21.00 to 22.00
Steel axles	21.50 to 22.50

Bookings of Steel Castings Well Sustained

WASHINGTON, May 19.—Based on reports to the Department of Commerce, from principal manufacturers representing more than two-thirds of the commercial castings capacity of the United States, bookings in April of steel castings amounted to 58,708 net tons or 58.5 per cent of capacity compared with 59,508 tons in March, or 59.3 per cent of capacity. The reports cover 68 identical companies with a monthly capacity of 100,400 tons of which 43,000 tons are usually devoted to railroad specialties and 57,400 tons to miscellaneous castings.

Bookings of railroad specialties in April totaled 22,034 tons as against 21,670 tons in March, representing 51.2 and 50.4 per cent capacity, respectively. Bookings of miscellaneous castings in April amounted to 36,674 tons as against 37,838 tons, representing 63.9 and 65.9 per cent capacity, respectively. Total bookings of all steel castings for the first four months of the present year amounted to 262,673 tons compared with 293,177 tons for the corresponding period of last year.

McKinney Steel Issues Securities

The McKinney Steel Holding Co. has been formed to control through stock ownership the McKinney Steel Co., Cleveland. The new company will also have the controlling voice in any merger or consolidation negotiations that may be undertaken. The company has been incorporated in Delaware with a capital stock of $7,250,000 in 6 per cent preferred shares and 10,000 shares of common stock. The preferred will be offered publicly.

Heretofore the McKinney company has had no securities in the hands of the public. While rumors of consolidations of some of the Ohio steel plants have been revived, these recent reports have not linked the McKinney Steel Co. with any proposed merger.

RAILROAD EQUIPMENT

Atlantic Coast Line Orders 25 Locomotives—Freight Car Business Light

Although good-sized inquiries for freight cars are in the offing, business in new railroad equipment in the past week has been exceedingly light. The Pennsylvania Railroad is inquiring for 367 passenger cars. The Fruit Growers Express bought 500 steel underframes. An order for 25 locomotives comes from the Atlantic Coast Line. The chief items are:

The Fruit Growers Express has ordered 500 steel underframes for freight cars from the Pressed Steel Car Co.

The General Equipment Co. has contracted with the American Car & Foundry Co. for the repair of 10 box cars.

The Mid-Continent Petroleum Corporation has ordered 3 tank cars from the American Car & Foundry Co.

The Pennsylvania is inquiring for 367 passenger cars as follows: 105 coaches, 15 passenger and baggage cars, 10 dining cars, 5 combination passenger, baggage and mail cars, 10 baggage and mail cars and 222 baggage cars.

The General Sugar Co. has ordered 225 cane cars from the American Car & Foundry Co.

The Fidelity Sugar Co. has placed 130 cane cars with the American Car & Foundry Co.

The Atlantic Coast Line, which several weeks ago bought considerable motive power equipment, has added to its purchases by ordering 25 more locomotives from the Baldwin Locomotive Works.

Mechanical Engineers at Milwaukee

MILWAUKEE, May 19.—More than 900 members and guests have registered for the spring meeting of the American Society of Mechanical Engineers, which opened here yesterday at Hotel Pfister and will continue through Thursday, May 21. Simultaneous sessions devoted to shop practice, hydroelectric design and pulverized coal held today were well attended. The Allis-Chalmers Mfg. Co. entertained 400 at luncheon, which was followed by inspection of the plant.

The Midwest Power Show is at the Municipal Auditorium here, being held simultaneously with the meeting of the mechanical engineers and the conventions of the American Society of Refrigerating Engineers and the Wisconsin Association of the National Association of Stationary Engineers. There are more than 200 companies exhibiting power plant and other equipment and the show is the first of its kind to be held west of New York.

Stack Produces 897 Tons in One Day

Unusually heavy blast furnace output has been a factor in hastening the blowing out of stacks in the Chicago district. From midnight Saturday, May 16, until midnight Sunday, May 17, the No. 2 furnace of the Illinois Steel Co. at South Chicago produced 897 tons.

"Welding to order" will be one of the features of the Chemical Equipment Exposition, State Armory, Providence, June 22 to 27, inclusive. The particular field of welding and cutting processes to be covered by the demonstrations is that of special corrosion-resistant alloys. To insure a particular demonstration, the Association of Chemical Equipment Manufacturers, 1328 Broadway, New York, must be informed some days prior to the show of the particular alloy in which the intended visitor is interested.

The School of Engineering of Johns Hopkins University, Baltimore, will award a graduate assistantship in gas engineering for the academic year 1925-26. This assistantship will pay the holder $500. In return he will be required to spend a number of hours each week assisting in the undergraduate laboratory instruction in gas and fuel technology.

APRIL STRUCTURAL SALES

Four Months This Year Only 4½ Per Cent Under Same Period Last Year

WASHINGTON, May 19.—The Department of Commerce announces sales of fabricated structural steel for April as 77 per cent of capacity, based on total bookings of 191,895 tons reported by fabricators with a capacity of 249,375 tons per month, as against March bookings of 69 per cent of capacity. Shipments of fabricated structural steel in April represented 78 per cent of the capacity of firms reporting this item, as against 74 per cent in March and 69 per cent a year ago.

The table below lists the statistics reported by 196 identical firms (including data in earlier months for 12 additional firms now out of business) with a present capacity of 257,220 tons per month, comparing with 254,760 in 1924, 249,890 in 1923 and 241,565 in 1922. For comparative purposes, the percentage figures are used to obtain a computed total for the United States, based on a capacity of 285,000 tons per month in 1923 and 290,000 in 1924 and 1925.

Bookings of Fabricated Structural Steel

1924	Actual Tonnage	Per Cent of Capacity	Computed Tonnage
January	176,714	70	203,000
February	180,683	71	205,900
March	174,343	69	200,100
April	162,676	64	185,600
Total (4 mos.)			794,600
May	147,079	58	168,200
June	162,228	64	185,600
July	173,258	68	197,200
August	150,266	59	171.100
September	166,147	65	188,500
October	165,325	65	188,500
November	212,335	83	240,700
December	200,837	79	229,100
1925			
January	147,279	57	165,300
February	[1] 149,369	58	168,200
March	[2] 176,191	69	200,100
April	[3] 191,895	77	223,300
Total (4 mos.)			756,900

[1] Reported by 193 firms with a capacity of 255,420 tons.
[2] Reported by 191 firms with a capacity of 254,130 tons.
[3] Reported by 175 firms with a capacity of 249,375 tons.

Awards of More Than 33,000 Tons and Inquiries of Nearly 29,000 Tons in Week

Of structural steel awards, amounting to 33,339 tons in the past week, nearly one-half was in the New York metropolitan district. And of the pending business, 28,595 tons, one prospective building for the New York financial district calls for 16,000 tons, or more than half. The largest job awarded was an apartment building in New York, taking 5000 tons. Awards include the following:

Ritz Tower, an apartment building for Arthur Brisbane, Park Avenue and Fifty-seventh Street, New York, 5000 tons, to Post & McCord.

Loft building, West Thirty-seventh Street, New York, 1400 tons, to Paterson Bridge Co.

Apartment building, 940 Fifth Avenue, New York, 650 tons, to George A. Just Co.

Loft building, West Fifty-seventh Street, New York, 400 tons, to Harris Structural Steel Co.

Garage, East Fifty-fifth Street, New York, 500 tons, to Harris Structural Steel Co.

Office building, 37 West Forty-seventh Street, 1000 tons, to Hinkle Iron Works.

Farmers Loan & Trust Co., office and bank building, Fifth Avenue at Forty-first Street, New York, 2600 tons, to Hay Foundry & Iron Works.

General Hospital, Paterson, N. J., 500 tons, to Paterson Bridge Co.

High school, Newark, N. J., 300 tons, to American Bridge Co.

Maine Central Railroad, two bridges, 350 tons, to American Bridge Co.

Texas Utility Co., power plant at Trinidad, Tex., 1400 tons, to Kansas City Structural Steel Co.

New York Railways Co., New York, shop at 146th Street and Lenox Avenue, 200 tons, to McClintic-Marshall Co.

Office building, Twenty-eighth Street and Madison Avenue, New York, 2000 tons, to Levering & Garrigues Co.

Office building, West Fayette, Genesee and Montgomery Streets, Syracuse, N. Y., 2500 tons, to Levering & Garrigues Co.

Rochester Gas & Electric Co., office building, Rochester, N. Y., about 1700 tons, to Leach Steel Corporation, Buffalo.

Federal Land Bank, Louisville, Ky., 250 tons, to Snead Architectural Iron Works.

Two Pennsylvania State highway bridges, 425 tons, to American Bridge Co.

Auditorium, City of Minneapolis, 4014 tons, to Minneapolis Steel & Machinery Co.

Northern Pacific Railway, overhead bridge, Thirty-third Avenue, Northeast, Minneapolis, 673 tons, to Fort Pitt Bridge Works.

Western Electric Co., crane runway south of buildings 84 and 85, Cicero, Ill., 234 tons, to McClintic-Marshall Co.

Sub and superstructure, section 2, South Water Street Improvement, Chicago, 227 tons, to McClintic-Marshall Co.

Duluth Auto Exchange, Duluth, Minn., automobile sales building, 106 tons, to American Bridge Co.

Illinois Central, viaduct, Riverdale, Ill., 380 tons, to Mississippi Valley Structural Steel Co.

Coakley Brothers, public warehouse, Milwaukee, 150 tons, to Milwaukee Structural Steel Co.

Commercial Club, San Jose, Cal., 350 tons, to Schrader Iron Works.

California State Highway Commission, Sacramento, two Sacramento River bridges, 130 tons, to Moore Dry Dock Co.

Eugene, Ore., Hendricks Bridge, 190 tons, to Virginia Bridge & Iron Co.

Beatty apartment, Modesto, Cal., 180 tons, to California Steel Co.

Transportation Guarantee Co., San Francisco, 190 tons, to Dyer Brothers.

Brombacher Iron Works, Los Angeles, 200 tons, fabricating to be done in the company shops.

Emsco Steel Products Co., Los Angeles, 1200 tons for stock, to unnamed Eastern mill.

Edgewater Club, Santa Monica, Cal., 340 tons, to Llewelyn Iron Works.

Standard Oil Co., San Francisco, 100 tons, to two unnamed Eastern mills.

United States Government bridge over Chesapeake and Delaware Canal, 550 tons, to Phoenix Bridge Co.

Hershey Sugar Co., boiling house at its Cuban sugar mill, 1400 tons, to Belmont Iron Works.

Column cores for the Kahn Building, Philadelphia, 600 tons, to Belmont Iron Works.

St. Mary's Clay Products Co., St. Mary's, Pa., 650 tons, to McClintic-Marshall Co.

Consolidated Paper Co., paper mill, Detroit, 300 tons, to McClintic-Marshall Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

Equitable Trust Co., office building on the site of the Mills Building, Broad Street and Exchange Place, New York, 16,000 tons.

Underwriters Salvage Co., storage building, Broome Street, New York, 1300 tons.

Saks' store, Thirty-fourth Street and Broadway, New York, additional floor, 300 tons.

Otis Elevator Co., Yonkers, N. Y., addition, 2000 tons.

Hotel, Clearwater, Fla., 700 tons.

Amherst College, Amherst, Mass., dormitory, 200 tons.

Connecticut Mutual Life Insurance Co., office building, Hartford, Conn., 1200 tons.

Chase Bag Co., Toledo, Ohio, factory, 300 tons.

City of Erie, Pa., bridge, 250 tons.

Ohio River dam No. 53, U. S. Engineers Office, Louisville, Ky., 250 tons.

Masonic Temple, New Orleans, 400 tons.

Eight barges for Mississippi River service, 1200 tons.

Washington State Highway Committee, Olympia, Wash., four bridges, 2000 tons, bids close June 9.

Sanatorium, Melrose and Larchmont Streets, Los Angeles, 200 tons.

High school, Compton, Cal., 200 tons.

Los Angeles County Hospital, Los Angeles, 200 tons.

City of Los Angeles, outfall sewer, 170 tons.

Oregon State Highway Commission, Portland, Ore., three bridges, 110 tons.

Freewater, Ore., pipe line, 280 tons.

East Bay Municipal Utility District, Oakland, Cal., Mokelumme River pipe line, from San Joaquin River to San Pablo reservoir, 15,000 tons.

Associated Oil Co., tanks, for erection at Coalinga, Cal., 460 tons.

Pennsylvania Railroad, bridge over Chesapeake and Delaware Canal, 1000 tons.

High school building, Reading, Pa., 500 tons.

Eagle Avenue grade separation, Detroit, 1300 tons.

Hinckley & Schmitt Co., plant building, Chicago, 345 tons.

Northern Pacific, ore docks, Superior, Wis., 1200 tons.

McKean County, Pa., bridge, 150 tons.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
May	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
13.....	13.62½	13.37½	54.37½	8.00	7.65	7.30	6.95
14.....	13.62½	13.37½	54.50	8.00	7.65	7.27½	6.92½
15.....	13.62½	13.37½	54.25	8.05	7.70	7.25	6.90
16.....	13.62½	13.37½	....	8.05	7.75	7.27½	6.92½
18.....	13.62½	13.37½	54.37½	8.10	7.80	7.27½	6.92½
19.....	13.62½	13.37½	54.25	8.15	7.85	7.25	6.90

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, May 19.

The markets are all very quiet but steady. The copper market is only moderately active but quotations are firm. The tin market has been quieter than in many weeks but with little change in prices. Demand for lead is not as active as it was although values are higher. The zinc market is a little more active after several days of dullness.

Copper.—For over a week the price of electrolytic copper has remained at 13.62½c., delivered. Quite a little business has been done, some days being more active than others, but the volume has been by no means large. Consumers are buying only for immediate needs and producers are thought to be well sold up for at least May and part of June. This situation explains the steadiness of the market. There is some export buying, business having been done recently at 13.60c., f.a.s., but the tone is a little easier today at 13.50c. to 13.55c. Lake copper is quoted at 13.62½c., New York.

Tin.—The week has been a featureless one. Total transactions in Straits tin have not been over 500 tons. One importer characterizes the period from the middle of last week to the present time as the quietest in many months. That the market has held firm in such circumstances is regarded as notable. Most of the trading is between dealers. Consumers are still indifferent and have not bought for July as was expected by this time. The market yesterday was stagnant and has not been much better today. Spot Straits tin was quoted today at 54.25c., New York. London prices are about £3 per ton less than a week ago, with spot standard quoted at £245, future standard at £247 and spot Straits at £250 10s. The Singapore price yesterday was £249 5s. Arrivals thus far this month have been 2495 tons with 5260 tons reported afloat.

Lead.—The market has been growing stronger from day to day, with the scarcity of May lead the feature. On May 14 the leading interest advanced its contract price from 7.75c. to 7.90c. Since then active buying has lessened, though there is still a good demand. Quotations in the outside market continue to advance steadily and today stand at 7.80c., St. Louis, or 8.10c., New York, for early delivery.

Late today the leading interest advanced its price to 8c., New York. Lead has sold as high as 8.20c., New York, in the outside market.

Zinc.—After a week of comparative dullness, inquiry particularly from galvanizers has been more active today. Several are inquiring for substantial tonnages. There has also been some export business at around 7c., Gulf ports. Quotations during the week have varied from 6.90c. to 6.95c., St. Louis, with the price today at 6.90c., St. Louis, or 7.25c., New York.

Nickel.—Shot and ingot nickel in wholesale lots is quoted at 31c. to 32c. per lb., and electrolytic nickel at 38c.

Antimony.—Spot Chinese metal continues to demand high prices, sales having been made at 17c., New York, duty paid, which is slightly lower than a week ago. There has been heavy buying of metal due to arrive in June and July.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 27c. to 28c., delivered.

Old Metals.—Demand is quiet and prices are unchanged. Dealers' selling prices are as follows in cents per lb.:

Copper, heavy and crucible	12.75
Copper, hevy and wire	13.00
Copper, light and bottoms	10.50
Heavy machine composition	10.00
Brass, heavy	8.00
Brass, light	6.75
No. 1 red brass or composition turnings	9.00
No. 1 yellow rod brass turnings	8.75
Lead, heavy	7.00
Lead, tea	5.50
Zinc	4.50
Cast aluminum	19.00
Sheet aluminum	19.00

Chicago

MAY 19.—Tin has declined and lead has advanced during a week in which considerable business was negotiated. Buyers are beginning to feel that a turn in the market may be at hand. Old metal prices are unchanged. We quote, in carload lots: Lake copper, 13.87½c.; tin, 55.50c.; lead, 7.90c.; zinc, 7c.; in less than carload lots, antimony, 19c. On old metals we quote copper wire, crucible shapes and copper clips, 10.50c.; copper bottoms, 9.25c.; red brass, 8.25c.; yellow brass, 7.25c.; lead pipe, 6.25c.; zinc, 4c.; pewter, No. 1, 28c.; tin foil, 35c.; block tin, 42c.; all buying prices for less than carload lots.

JAPAN BUYS FRENCH RAILS

Government Railroad Buys 10,000 Tons at Low Price—Casing and Gas Pipe Inquiries

NEW YORK, May 19.—While there are several fairly sizable tonnages of material in the market from large Japanese consumers, European sellers are keen competitors for Far Eastern business, quoting prices that are several dollars a ton under the figures submitted by American mills. The 5000 tons of 60-lb. and 5000 tons of 75-lb. rails, recently inquired for by the Imperial Government Railways of Japan, were awarded to a Japanese export and import company at a price of less than $34 per ton, c.i.f. Japan for European material. August-September-October delivery was offered compared with June-July delivery by American mills at a price several dollars a ton higher. It is understood that the order will be placed with the Societe Anonyme des Acieries de Micheville, Micheville-Villerupt, France, or De Wendel & Co., Joeuf, France, or divided between these two mills.

The Nippon Oil Co. is inquiring for 80,000 meters of oil well casing, bids on which were recently opened. In some quarters it is felt that award to a European maker is probable. An inquiry is expected before long for about 1,100,000 ft. of gas pipe from the Tokio Gas Co., Tokio, Japan.

An inquiry from the Nippon Oil Co. for a sizable tonnage of tin plate is still expected. In the past month, it is estimated by sellers to Japan that orders have totaled between 30,000 and 40,000 base boxes, distributed among the several American mills. Since March 10, when it was expected that the tariff on tin plate would be increased by the Japanese Government, the local market in Japan has been steadily declining, the duty having been continued unchanged. The present lack of an understanding between American and British makers has furthered the decline, so that as low as $5.70 per base box, c.i.f. Japan, is reported obtainable from American sellers and the possibility of still lower prices from British tin plate mills, should a large tonnage be involved in an inquiry.

The Chinese market is quiet except for the usual demand for wire shorts and some small business in tin plate scrap. An exporter to China reports that a recent sale to China from Germany consisted of about 200 tons of tin plate wasters at a price of 3.20c. per lb., c.i.f. Chinese port.

Forty men have been furloughed from the Willard, Ohio, car shops of the Baltimore & Ohio Railroad until further notice.

Prices of Finished Iron and Steel Products (Carload Lots)

Tank Plates

F.o.b. Pittsburgh mill, base, per lb.....2c. to 2.10c.
F.o.b. Chicago, base, per lb.....2.20c.

Structural Shapes

F.o.b. Pittsburgh mills, base, per lb.....2c. to 2.10c.
F.o.b. Chicago, base, per lb.....2.20c.

Iron and Steel Bars

Soft steel bars f.o.b. P'gh mills, base, per lb.....2c. to 2.10c.
Soft steel bars f.o.b. Chicago, base, per lb.....2.10c. to 2.20c.
Reinforcing steel bars f.o.b. P'gh mills, base, per lb., 2.00c. to 2.10c.
Rail steel bars, f.o.b. Chicago district mills, base, per lb..2.10c.
Common iron bars, f.o.b. Chicago, base, per lb..2.05c. to 2.10c.
Refined iron bars, f.o.b. P'gh mills, base, per lb.....3.00c.
Common iron bars, eastern Pa. mill, base, per lb.....2.10c.

Hot-Rolled Flats

Hoops, base, per lb., Pittsburgh.....2.40c.
Bands, base, per lb., Pittsburgh.....2.40c.
Strips, 6 in. and narrower, base, per lb., Pittsburgh.....2.40c.
Strips, 6 to 12-in., base, per lb., Pittsburgh.....2.20c.
Strips, 6 in. and narrower, Chicago.....2.50c.
Strips, wider than 6 in., Chicago.....2.40c.

Cold-Finished Steel

Screw stock and shafting, f.o.b. P'gh mills, base, per lb..2.70c.
Screw stock and shafting, f.o.b. Chicago, base, per lb., 2.70c. to 2.80c.
Screw stock, base, per lb., Cleveland.....2.75c.
Shafting, ground, f.o.b. mill, base, per lb.....3.10c.
Strips, f.o.b. P'gh mills, base, per lb.....4c.
Strips, f.o.b. Cleveland mills, base, per lb.....3.75c. to 4c.
Strips, f.o.b. delivered Chicago, base, per lb....4.05c. to 4.30c.
Strips, f.o.b. Worcester mills, base, per lb.....4.15c.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

Nails, base, per keg.....$2.75
Galvanized nails, 1-in. and longer, base plus..... 2.25
Galvanized nails, shorter than 1 in., base plus..... 2.50
Bright plain wire, base, No. 9 gage, per 100 lb..... 2.50
Annealed fence wire, base, per 100 lb..... 2.65
Spring wire, base, per 100 lb..... 3.50
Galvanized wire, No. 9, base, per 100 lb..... 3.10
Galvanized barbed, base, per 100 lb..... 3.45
Galvanized staples, base, per keg..... 3.45
Painted barbed wire, base, per 100 lb..... 3.20
Polished staples, base, per keg..... 3.20
Cement coated nails, base, per count keg..... 2.10
*Bale ties, carloads, to jobbers....75, 15 and 5 per cent off list
*Bale ties, carloads, to retailers...75, 10 and 6 per cent off list
Woven wire fence, base, per net ton to retailers.....$65.00

Chicago district mill prices are $2 per ton above the foregoing and Chicago delivered prices are $3 per ton above the prices f.o.b. Cleveland and Pittsburgh. Birmingham mill prices $3 a ton higher; Worcester, Mass., mill $3 a ton higher on production of that plant, and Duluth, Minn., mills $2 a ton higher; Anderson, Ind., $1 higher.

*F.o.b. Cleveland.

Sheets

Blue Annealed
(base) per lb.

Nos. 9 and 10, f.o.b. Pittsburgh.....2.40c. to 2.50c.
Nos. 9 and 10 (base) per lb., f.o.b. Chicago dist. mills, 2.50c. to 2.55c.

Box Annealed, One Pass Cold Rolled

No. 28 (base) per lb., f.o.b. Pittsburgh.....3.20c. to 3.40c.
No. 28 (Base) per lb., f.o.b. Chicago dist. mill..3.40c. to 3.45c.

Galvanized

No. 28 (base) per lb., f.o.b. Pittsburgh.....4.30c. to 4.50c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill..4.50c. to 4.55c.

Tin-Mill Black Plate

No. 28 (base) per lb., f.o.b. Pittsburgh.....3.30c. to 3.40c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill..3.50c. to 3.60c.

Automobile Body Sheets

No. 22 (base) per lb., f.o.b. Pittsburgh.....4.40c.

Long Ternes

No. 28 (base) 8-lb. coating, per lb., f.o.b. mill..4.75c. to 4.90c.

Tin Plate

Standard cokes, per base box, f.o.b. Pittsburgh district mills.....$5.50
Standard cokes, per base box f.o.b. Chicago district mills 5.60
Standard cokes, per base box f.o.b. Elwood, Ind..... 5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)
(Per Package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.20	20-lb. coating I. C.	$15.50
8-lb. coating I. C.	11.50	25-lb. coating I. C.	17.00
15-lb. coating I. C.	14.35	30-lb. coating I. C.	18.35
		40-lb. coating I. C.	20.35

Rivets

Large, f.o.b. P'gh and Cleveland mills, base, per 100 lb., $2.40 to $2.60
Large, f.o.b. Chicago, base, per 100 lb..... 2.75
Small, f.o.b. Pittsburgh.....70, 10, 5 per cent off list
Small, Cleveland .....70 and 10 to 70, 10 and 5 per cent off list
Small, Chicago .....70 and 10 per cent off list

Rails and Track Equipment

(F.o.b.)

Rails, standard, per gross ton.....$43.00
Rails, light, billet, base, per lb.....1.75c.
Rails, light rail steel, base, per lb.....1.65c. to 1.75c.
Spikes, 5/16 in. and larger, base, per 100 lb.....$2.80 to $3.10
Spikes, ½ in. and smaller, base, per 100 lb..... 3.00 to 3.40
Spikes, boat and barge, base, per 100 lb..... 3.25
Track bolts, all sizes, base, per 100 lb..... 3.90 to 4.25
Tie plates, per 100 lb..... 2.35 to 2.40
Angle bars, base, per 100 lb..... 2.75

Welded Pipe

(F.o.b. Pittsburgh district mills)

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
⅛ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	13
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3	61	50½
¼ to ⅜	47	30½	¼ to ⅜	+11	+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½	60	49½	1 to 1½	30	14

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts on steel pipe are increased (on black) by one point, with supplementary discount of 5 per cent and (on galvanized) by 1½ points, with supplementary discount of 5 per cent. On iron pipe, both black and galvanized, the preferentials to large jobbers are 1, 5 and 2½ per cent beyond the above discount.

NOTE—The above discounts on steel pipe also apply at Lorain, Ohio. Chicago district mills have a base 2 points less. Chicago delivered base 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point having the lowest rate to destination.

Boiler Tubes

(F.o.b. Pittsburgh)

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Beyond the above discounts, 5 fives extra are given on lap welded steel tubes and 2 tens on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	60	3 in.	45
1¼ and 1½ in.	52	3¼ to 3½ in.	47
1¾ in.	36	4 in.	50
2 and 2¼ in.	31	4½, 5 and 6 in.	45
2½ and 2¾ in.	39		

Hot-Rolled

2 and 2¼ in.	34	3¼ and 3½ in.	50
2½ and 2¾ in.	42	4 in.	53
3 in.	48	4½, 5 and 6 in.	48

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30 base.....85 to 87 per cent off list
Carbon 0.30 to 0.40 base.....83 to 85 per cent off list
Plus usual differentials and extra for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

	Cents per Ft.		Cents per Ft.
2-in. O.D. 12 gage	14¼	2¼-in. O.D. 10 gage	18
2-in. O.D. 11 gage	15	3-in. O.D. 7 gage	33
2-in. O.D. 10 gage	16	1½-in. O.D. 9 gage	15
2¼-in. O.D. 12 gage	16	5⅝-in. O.D. 9 gage	50
2¼-in. O.D. 11 gage	17	5½-in. O.D. 9 gage	52

Prices of Iron and Steel Products and Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 51.50 per cent iron	$4.55
Old range non-Bessemer, 51½ per cent iron	4.40
Mesaba Bessemer, 51.50 per cent iron	4.40
Mesaba non-Bessemer, 51.50 per cent iron	4.25
High phosphorus iron, 51.50 per cent	4.15

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	9.50c. to 10c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus	44c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, high grade, per unit, in 60 per cent concentrates	$9.00 to $11.00
Chrome ore, Indian basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f., Atlantic seaboard	22.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	80c.

Coke and Coal

(Per Net Ton)

Furnace coke, f.o.b. Connellsville prompt	$3.00
Foundry coke, f.o.b. Connellsville prompt	$4.00 to 4.25
Mine run steam coal, f.o.b. W. Pa. mines	1.50 to 2.00
Mine run coking coal, f.o.b. W. Pa. mines	1.50 to 1.75
Mine run gas coal, f.o.b. W. Pa. mines	2.00 to 2.25
Steam slack, f.o.b. W. Pa. mines	1.45 to 1.50
Gas slack, f.o.b. W. Pa. mines	1.50 to 1.60

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$115.00
Ferromanganese, foreign, 80 per cent, f.o.b. Atlantic port, duty paid	115.00
Ferrosilicon, 50 per cent, delivered	$82.50 to 85.00
Ferrosilicon, 75 per cent	145.00 to 147.50
Ferrotungsten, per lb. contained metal	90c. to 95c.
Ferrochromium, 4 per cent carbon and up, 60 to 70 per cent Cr., per lb. contained Cr. delivered	11.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent	$33.00
Spiegeleisen, domestic, 16 to 19 per cent	32.00

Ferrosilicon, Bessemer, 10 per cent, $35.50; 11 per cent, $38; 12 per cent, $40.50; electric furnace ferrosilicon, 10 per cent, $38; furnace with an advance of $1 per unit for material above 10 per cent.

Silvery iron, 6 per cent, $24; 7 per cent, $25; 8 per cent, $26.50; 9 per cent, $28.50; 10 per cent, $30.50; 11 per cent, $33; 12 per cent, $35.50.

Fluxes and Refractories

Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton, f.o.b. Illinois and Kentucky mines	18.50
Fluorspar, foreign, 85 per cent calcium fluoride, not over 5 per cent silica, c.i.f. Philadelphia, duty paid, per net ton	18.00
Fluorspar, No. 1 ground bulk, 95 to 98 per cent calcium fluoride, not over 2½ per cent silica, per net ton, f.o.b. Illinois and Kentucky mines	32.50
Fluorspar, acid lump, 98 per cent plus calcium fluoride, not over 1 per cent silica, per net ton, f.o.b. Illinois and Kentucky mines	35.00

Per 1000 f.o.b. works:

Fire Clay	High Duty	Moderate Duty
Pennsylvania	$43.00 to $46.00	$40.00 to $43.00
Maryland	48.00 to 50.00	42.00 to 45.00
Ohio	43.00 to 46.00	40.00 to 43.00
Kentucky	43.00 to 45.00	40.00 to 43.00
Illinois	43.00 to 45.00	40.00 to 43.00
Missouri	45.00 to 48.00	38.00 to 42.00
Ground fire clay, per ton		6.50 to 7.50

Silica Brick:	
Pennsylvania	40.00
Chicago	49.00
Birmingham	54.00
Silica clay, per ton	8.00 to 9.00
Magnesite Brick:	
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)	65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)	40.00
Chrome Brick:	
Standard size, per net ton	42.00

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

Machine bolts, small rolled threads..60 and 10 per cent off list

Machine bolts, all sizes, cut threads, 50, 10 and 10 per cent off list

Carriage bolts, smaller and shorter, rolled threads, 50, 10 and 10 per cent off list

Carriage bolts, cut threads, all sizes..50 and 10 per cent off list

Eagle carriage bolts..65 and 10 per cent off list

Lag bolts ..60, 10 and 10 per cent off list

Plow bolts, Nos. 1, 2 and 3 heads....50 and 10 per cent off list

Other style heads..20 per cent extra

Machine bolts, c.p.c. and t. nuts, ⅝ x 4 in., 45, 10 and 5 per cent off list

Larger and longer sizes..45, 10 and 5 per cent off list

Hot-pressed nuts, blank or tapped, square..4c. off list

Hot-pressed nuts, blank or tapped, hexagons..4.40c. off list

C.p.c. and t. square or hex. nuts, blank or tapped..4.10c. off list

Bolt ends with hot pressed nuts..50, 10 and 10 per cent off list

Bolt ends with cold pressed nuts..45, 10 and 5 per cent off list

Washers*..6c. to 5.50c. off list

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent less than above for less than car lots. On hot pressed and cold punched nuts the discount is 25c. less per 100 lb. than quoted above for less than car lots.

(Quoted with freight allowed within zone limits)

Semi-finished hex. nuts:

⅞ in. and smaller, U. S. S..80, 10 and 5 per cent off list

⅞ in. and larger, U. S. S..75, 10 and 5 per cent off list

Small sizes, S. A. E..80, 10, 10 and 5 per cent off list

S. A. E., ⅝ in. and larger..75, 10, 10 and 5 per cent off list

Stove bolts in packages..80 and 5 per cent off list

Stove bolts in bulk..80 and 5 and 2½ per cent off list

Tire bolts ..50, 10 and 5 per cent off list

Semi-Finished Castellated and Slotted Nuts

(Prices delivered within specified territories)

(To jobbers and consumers in large quantities)

	Per 100 Net S. A. E.	Per 100 Net U. S. S.		Per 100 Net S. A. E.	Per 100 Net U. S. S.
¼-in.	$0.44	$0.44	⅝-in.	$2.35	$2.40
5/16-in.	.515	.515	¾-in.	3.60	3.60
⅜-in.	.62	.66	⅞-in.	5.55	5.80
7/16-in.	.79	.90	1-in.	8.90	8.90
½-in.	1.01	1.05	1⅛-in.	12.60	13.10
9/16-in.	1.38	1.42	1¼-in.	18.35	18.35
⅝-in.	1.70	1.73	1½-in.	31.00	31.00

Larger sizes—Prices on application.

Cap and Set Screws

(Freight allowed within zone limits)

Milled cap screws..80, 10 and 5 per cent off list

Milled standard set screws, case hardened, 80 and 10 per cent off list

Milled headless set screws, cut thread..80 and 10 per cent off list

Upset hex. head cap screws, U. S. S. thread, 80, 10, 10 and 5 per cent off list

Upset hex. cap screws, S. A. E. thread, 80, 10, 10 and 5 per cent off list

Upset set screws..80, 10 and 10 per cent off list

Milled studs ..75 per cent off list

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$35.50
Forging billets, ordinary carbons	40.50
Forging billets, guaranteed analysis	45.50
Sheet bars	35.00
Slabs	35.50
*Wire rods, common soft, base, No. 5 to ⅜-in.	46.00
Wire rods, common soft, coarser than ⅜-in.	$2.50 over base
Wire rods, screw stock	$5.00 per ton over base
Wire rods, carbon 0.20 to 0.40	2.00 per ton over base
Wire rods, carbon 0.41 to 0.55	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75	7.50 per ton over base
Wire rods, carbon over 0.75	10.00 per ton over base
Wire rods, acid	15.00 per ton over base
Skelp, grooved, per lb.	2c.
Skelp, sheared, per lb.	2c.
Skelp, universal, per lb.	2c.

*Chicago mill base is $50. Cleveland mill base, $46.

Alloy Steel

(F.o.b. Pittsburgh or mill)

S. A. E. Series Numbers	Bars 100 lb.
2100*(1¼% Nickel, 10 to 20 per cent Carbon)	$3.00 to $3.25
2300 (3½% Nickel)	4.50 to 4.75
2500 (5% Nickel)	6.00 to 6.25
3100 (Nickel Chromium)	3.50 to 3.65
3200 (Nickel Chromium)	5.50
3300 (Nickel Chromium)	7.50 to 7.75
3400 (Nickel Chromium)	6.50 to 6.75
5100 (Chromium Steel)	3.50
5200*(Chromium Steel)	7.50 to 8.00
6100 (Chromium Vanadium bars)	4.25 to 4.50
6100 (Chromium Vanadium spring steel)	4.00 to 4.25
9250 (Silicon Manganese spring steel)	3.50
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium)	4.25 to 4.50
Nickel Chrome Vanadium (0.60 Nickel, 0.60 Chromium, 0.15 Vanadium)	4.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.25
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	3.75
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

PERSONAL

W. G. Hume and A. A. Nelson, heretofore assistants to H. G. Moore, who recently resigned as vice-president and general sales manager Keystone Steel & Wire Co., Peoria, Ill., have succeeded to the management of sales as sales manager and assistant sales manager respectively. Mr. Moore's retirement from active service came after 45 years of activity. During the past ten years he was in charge of the sales department and latterly as vice-president participated with other officers of the company in the management and development of the company. After taking a thorough rest from the strenuous activities of his position, Mr. Moore will make plans for the future. His career in the steel, hardware and implement industry extends over many years, including 18 years with the John Deere Plow Co. at Kansas City, one and a half years as secretary and general sales manager of the Racine-Sattley Co., Racine, Wis., and four years as manager and secretary of the Big Four Implement Co., Kansas City, which he organized. After leaving that company he engaged in business in Kansas City as H. G. Moore, wire merchant, jobbing wire products and acting as Western distributor and sales agent for the Keystone Steel & Wire Co. In 1915 he went to Peoria to join the Keystone organization at headquarters. Since that time the Keystone company has expanded not only its fence and manufacturing plant, but has added steel mills and open-hearth furnaces. Mr. Moore is president of the American Hardware Manufacturers' Association, and in 1915 and 1916 was consecutively vice-president and president of the National Association of Credit Men.

—

M. M. Broad is now associated in an executive capacity with the Grant Iron & Metal Co., Detroit.

—

Donald Putnam, of the Ashland By-Product Coke Co., Ashland, Ky., has resigned as secretary-treasurer of the Southern Ohio Pig Iron and Coke Association, owing to pressure of business. Charles R. Peebles, Ashland, Ky., will succeed him temporarily until another election.

—

Frank Miller, manager of coke operations, and J. P. Dovel, general manager of furnaces, have been made vice-presidents of the Sloss-Sheffield Steel & Iron Co., Birmingham, through the office of President Hugh Morrow. The new officials have been with the corporation a long time.

—

Frederick B. Wilmot, formerly in charge of industrial equipment sales for the Detroit Range Boiler & Steel Barrel Co., Detroit, has resigned and opened an office as manufacturers' agent, specializing in industrial transportation equipment. He will handle the Range Boiler & Steel Barrel Co.'s line, and that of the Barrett Cravens Co., Detroit, having the Michigan territory for the latter.

—

George A. Drysdale has resigned as metallurgical editor of the *Foundry* to become associated with the Metal Improvement Co., Cleveland, on June 1, as metallurgical engineer. He has had 27 years' experience in practical foundry and metallurgical work. After graduation from McGill University, Montreal, Canada, in 1898, later receiving the degree of Master of Science, he was successively chemist, metallurgist and research director for various companies, including Howard & Bullough American Machine Co., Pawtucket, R. I.; Stover Mfg. & Engine Co., Freeport, Ill.; International Harvester Co. of Canada, Hamilton, Ontario; Atlas Engine Works, Indianapolis; Ingersoll-Rand Co., Phillipsburg, N. J.; Midwest Engine Corporation, Indianapolis, and the Hill Pump Works, Anderson, Ind. He became metallurgical editor of the *Foundry* Feb. 1, 1924.

H. S. Albert, a director of the Albert Tool Co., Mercer, Pa., maker of small tools and equipment, has been appointed general manager.

—

Dr. E. J. Fithian, for 27 years treasurer of the Bessemer Gas Engine Co., Grove City, Pa., has been elected president, succeeding the late John G. Carruthers.

—

Samuel M. Lynch, for many years purchasing agent National Tube Co., Pittsburgh, has been promoted to the position of assistant to Taylor Alderdice, vice-president in charge of operations, and G. G. Goe has been appointed purchasing agent.

—

Harry R. Jones, R. V. Mitchell, Charles W. Wild and R. L. Rice, of Canton, Ohio, and John Sherwin, chairman of the board of the Union Trust Co., Cleveland, have purchased controlling interest in the Union Metal Mfg. Co., Canton. The management will remain with Charles C. Barrick, president, and W. L. Porterfield, general sales manager. The company manufactures metal lighting standards.

—

Frank Garratt, formerly associated with the Firth-Sterling Steel Co., McKeesport, Pa., and later with the Latrobe Electric Steel Co., Latrobe, Pa., has become identified with the Universal Steel Co., Bridgeville, Pa., as research metallurgist.

—

Richard Jones and Charles T. Scott have been appointed secretary-treasurer and assistant to the president, William Wuthenow, respectively, of the Republic Rolling Mill Corporation, lately formed to operate the bar iron mill at East Chicago, Ind., bought from the Republic Iron & Steel Co. by Briggs & Turivas, with whom both Mr. Scott and Mr. Jones were associated. Earl J. Smith, Chicago, attorney, is vice-president of the new company. Mr. Wuthenow's appointment was mentioned in THE IRON AGE of May 14.

—

W. C. Sproul, chairman, General Refractories Co. and formerly governor of Pennsylvania, has accepted the presidency of the American Refractories Institute. This organization was formally launched at a meeting of refractories producers and consumers held at the Mellon Institute of Industrial Research, Pittsburgh, on April 14, as noted in THE IRON AGE of April 16. It was formed for the purpose of promoting the common interests of the manufacturer and user of refractory materials.

—

Isaac M. Scott, president Wheeling Steel Corporation, Wheeling, W. Va., has been elected to succeed Alexander Glass, vice-president of the company, as a director of the American Iron and Steel Institute. Mr. Glass declined reelection. Reelected as directors, class of 1925, are John A. Topping, Joseph G. Butler, Jr., Samuel Mather, Edmund A. S. Clarke, William H. Donner, William J. Filbert and Willis L. King.

—

James W. Moore has been appointed works manager of the American Cast Iron Pipe Co.'s plant at North Birmingham, Ala. He has been connected with the company since 1916 and in 1917 was made chief engineer. From 1909 to 1916 he had been in the service of electric power interests in Birmingham and New Orleans.

—

Charles E. Schander, power plant engineer Allis-Chalmers Mfg. Co., Milwaukee, has been appointed operating engineer of the new sewage disposal plant of the city of Milwaukee on Jones Island. He will resume his duties upon the completion of the project, which represents a total expenditure of $14,000,000.

—

G. H. Webb has been appointed Philadelphia sales manager of the Central Steel Co. of Massillon, Ohio, succeeding A. B. Cooper, who died suddenly at his home in Philadelphia on May 3. Mr. Webb has been identified with the Central Steel Co. over 11 years.

J. F. Stoney has resigned as general manager of the Ferro Machine & Foundry Co., Cleveland, in order to devote his entire time to experimental work in molding and core making methods, with the view of reducing foundry costs. This work will be carried on in an experimental department, 25 x 90 ft., that is being fitted up in the Ferro plant and will be conducted for both the Ferro company and the Stoney Engineering Co., of which Mr. Stoney is head. He will continue as vice-president and a director of the Ferro company.

—

P. A. E. Armstrong, vice-president Ludlum Steel Co., has resigned and will devote the next few months to a much needed rest. During his eight-years' connection with the company he has been a director and vice-president and general sales manager. During this period he developed and patented for the company a number of different types of alloy steel, particularly those of the chrome-silicon rustless type. On his return from a vacation he expects to resume his activities in the steel business.

—

R. M. Bowman has been appointed assistant general purchasing agent of the United Alloy Steel Corporation, Canton, Ohio. He was formerly assistant purchasing agent of the Otis Steel Co., Cleveland, and has had several years' experience in the steel business.

—

H. L. Schreck, American representative of the Deutsche Maschinenfabrik A. G. (the Demag Co.), Duisburg, Germany, builder, among other things, of the Pilger seamless tube mills, has opened an office at 604 Frick Buildings, Pittsburgh.

—

Charles F. Abbott, executive director of the American Institute of Steel Construction, has been appointed a member of committee No. 2 on trade relations in connection with the National Distribution Conference organized by the Chamber of Commerce of the United States to study problems of distribution.

—

H. M. Griggs has resigned as manager of the Ore & Coal Exchange, Cleveland, of which he has been the head since its organization in 1918, and has become associated with Pollock, Becker & Co., Cleveland, as manager of the New York Central ore docks at Ashtabula, Ohio, which are operated by the Cleveland firm. He succeeds W. G. Pollock, who died recently. The Ore & Coal Exchange was organized by railroad, coal, vessel and ore interests in the winter of 1917-18 to handle the lake coal supply for the Northwest and the iron ore for the furnaces. Methods of coordination set up to move raw material during the stress of wartime conditions resulted so successfully that the Exchange has since been continued.

—

Samuel Mather and Harry Coulby, Pickands, Mather & Co., Cleveland, returned home May 17 from a six-months' trip around the world.

—

E. A. Grimmer has joined the sales organization of the Lathrop-Trotter Co., Cincinnati, district representative of the Conveyors Corporation of America, Chicago. He is a mechanical engineer, a graduate of Ohio State University, and experienced with practical boiler room work.

—

H. P. Rodgers, Leader Building, Cleveland, will handle the American mono-rail cable conveyor of the Conveyors Corporation of America, in Ohio. Eugene Smith, formerly with the Galion Iron Works, will be associated with him.

—

J. B. Irving has bought from William Pitt his portion of common stock of the Irving-Pitt Mfg. Co., Kansas City, Mo. Present officers of the company are: J. B. Irving, president; C. M. Farrell, vice-president and sales manager; C. M. Conger, secretary-treasurer; C. B. Irving, production manager; R. M. Van Valkenburgh, superintendent.

OBITUARY

JOEL W. BURDICK, one of the founders and chairman of the West Penn Steel Co., Brackenridge, Pa., died at his home in Pittsburgh, May 12, following an illness of several weeks. He was born in Almond, N. Y., 72 years ago, and had been engaged in railroad work until 1908, when he went to Pittsburgh to enter the steel business. He entered the employ of the Delaware & Hudson Co. in early manhood as a telegraph operator and eventually became passenger traffic manager of the railroad with headquarters at Albany, N. Y. During the war Mr. Burdick served with the American Red Cross as chief of the hospital and home service. He was author of several books, among the more notable ones being "Lorraine," a story of that province and its people, published in 1918; and "Our World Tour, a portrayal of the events and observations of a trip around the world made by Mr. Burdick in 1922 and 1923. Besides his connection with the West Penn Steel Co., Mr. Burdick was a director of the National Railways Publication Co., Philadelphia, and of the Bank of Pittsburgh. He was a member of the American Iron and Steel Institute and of several golf and country clubs in the Pittsburgh district. He is survived by Mrs. Burdick, four daughters and a son, Julian Burdick, president and general manager West Penn Steel Co.

—

CHARLES POPE, for years actively connected with the management of the Sharon, Pa., plant of the National Malleable Steel Castings Co., died at his home in Cleveland, May 15 of acute indigestion. Several years ago he suffered a partial breakdown and had lived retired in Cleveland since that time.

—

J. DALLAS DORT, aged 64, formerly president of the Dort Motor Car Co., Flint, Mich., died May 17 while playing golf at the Flint Country Club. He was one of the pioneers in the automobile industry.

—

HAY WALKER, vice-president Harbison-Walker Refractories Co., Pittsburgh, died May 14, at the Duquesne Club, Pittsburgh, where he had resided in recent years. He was born in Pittsburgh 50 years ago.

—

ENOCH STANFORD, lately of Philadelphia, died on May 12 at the Milford Hospital, Milford, Conn., aged 76. Mr. Stanford was the builder of the first tin plate mill in this country, at Elwood, Ind., having come to the United States from South Wales in 1891. He is survived by one son, George I. Stanford, president and treasurer of the Stanford Steel Corporation, Milford.

—

WILLIAM BUNN KURTZ, Philadelphia banker, who operated the Kurtz iron plate rolling mill at Coatesville, Pa., in the early nineties, died Monday, May 18, at his home in Germantown, Philadelphia. He was head of the firm of W. W. Kurtz & Co., later known as Kurtz Brothers, which nearly 25 years ago bought the old Pennock & Co. mill at Coatesville. This was one of the oldest plate mills in the United States. It was operated by Mr. Kurtz's firm for a number of years and then passed to the Worth Brothers Co. Mr. Kurtz was 69 years old and had long been connected with the banking business.

—

WALTER W. SEYMOUR, formerly chief engineer Kenwood Bridge Co., Chicago, and since its acquisition by the McClintic-Marshall Co., engineer of the Kenwood Works, died of heart failure in Chicago, May 14, at the age of 58.

—

WILLIAM F. SWIFT, secretary-treasurer City Foundry Co., Cleveland, was found dead in his garage May 18, having been asphyxiated by gas escaping from his automobile. He was 40 years of age.

TUNGSTEN STEEL SCRAP

Not Dutiable as Steel Scrap but as Alloy of Tungsten

WASHINGTON May 18.—Tungsten steel scrap, containing 14½ per cent tungsten, is excluded from the provision in paragraph 301 of the tariff act for "scrap steel," in a decision of the board of United States general appraisers of the Treasury Department, in a decision argued in behalf of the York Metal & Alloys Co., Inc. The board holds that an order for what is known commercially as tungsten steel scrap would not be satisfied by a delivery of the commodity commonly and commercially known as scrap steel, and that Congress elsewhere in the tariff act has provided for all alloys and alloying metals used in steel making.

The tungsten in this scrap is specifically provided for at the rate of 60c. per lb. and 25 per cent ad valorem, under paragraph 302, as "compounds of tungsten," and the whole importation likewise is subject to the additional duty of 8 per cent ad valorem imposed by paragraph 305 on "steel in all forms and shapes . . . by whatever name designated . . . containing more than 0.6 per cent of tungsten," according to the board's decision.

The issue arose over the importation of tungsten steel scrap by a New York importing company a year ago. The collector classified the scrap for duty at the rate of 75c. a ton under paragraph 301 of the tariff act. The protest, filed in the name of the York Metal & Alloys Co., Inc., claimed that the importation is provided for in paragraphs 302, 304 and 305 of the tariff act, and that such provisions are exhaustive and are intended to cover alloys and alloying material, regardless of the form or shape of the imported raw material. The collector's classification is reversed.

Pittsburgh Plus and Bethlehem Merger Cases Watched by Joint Commission

The Bethlehem merger case is being carefully watched by those who conducted the campaign against Pittsburgh Plus, according to a report just issued by the Joint Commission of Illinois, Iowa, Minnesota and Wisconsin, which were the four active member States in the organization known as the Associated States Opposing Pittsburgh Plus. On this point, the report reads in part as follows:

"At the September and October, 1924, meetings of the association, the question of action in the suit now pending before the Federal Trade Commission seeking the dissolution of the merger of the Bethlehem, Lackawanna and Midvale steel companies was discussed. It must be remembered that the order of the commission in the Pittsburgh Plus case extended only to the United States Steel Corporation and not to any of the so-called independent producers. It is therefore the belief in some quarters that if the Bethlehem-Midvale-Lackawanna merger is sanctioned by the court, the effect of the Pittsburgh Plus decision may in some measure be lost. That is because, if the merger corporation acquires a foothold in the Chicago district, it may be able to disregard the commission's order. For this reason it was deemed expedient to inquire closely into this case, to determine its possible future effect upon steel market conditions.

"However, at the meeting of Sept. 6, 1924, it was determined that any such action (in connection with the merger case) would exceed the power granted the several State commissions by their respective legislatures. But it was agreed also to be highly desirable that this merger case be given careful scrutiny and that the several commissions and the joint association as well recommend to their several State legislatures that this case be carefully scrutinized and that the legislatures take proper steps to have the public interest adequately represented, to the end that the public be fully advised and its interests protected in the pending merger case. Such action is therefore herewith recommended."

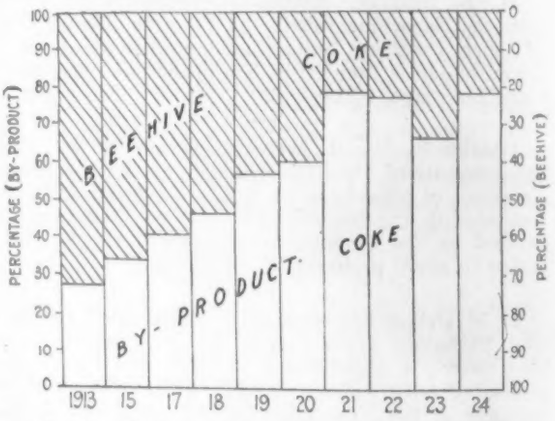
The legislative appropriations by the four States in connection with the Pittsburgh Plus case were as follows: Illinois, $25,000; Iowa, $10,000; Minnesota, $10,000; Wisconsin, $9,900. Total appropriations, $54,900.

A comprehensive outline of the progress of the Pittsburgh Plus case is included in the report. Mention is made of the untiring efforts on the part of W. E. McCollom, both in the capacity of secretary of the Western Association of Rolled Steel Consumers and subsequently as assistant secretary of the Associated States Opposing Pittsburgh Plus. Attention is called also to the effective publicity campaign conducted under the direction of Frank Emerich, Chicago.

Production of Coke in 1924

Depression in the iron and steel industry is cited by the United States Geological Survey as the reason for a decline of 23 per cent in the production of coke in 1924, compared with 1923. The total is given as 43,663,000 net tons in 1924 and 56,977,534 tons in 1923. This latter figure was the largest ever recorded. The shrinkage in beehive coke was more than 50 per cent, while that in by-product coke was less than 10 per cent.

This illustrates the change in character of the coke-producing industry. The table and the diagram on this page show clearly the way in which that industry has gradually shifted over from a preponderance of beehive coke in the years preceding the Armistice to a preponderance of by-poduct coke in the later years. This latter preponderance has become particularly marked in years of depression, as will be noted especially in the figures for 1921 and 1924, both of which showed about 78 per cent of the total from by-product ovens and only 22 per cent from beehive ovens.



In the Eight Years from 1913 *to* 1921 *the Relations of Beehive Coke Tonnage and By-Product Tonnage Were Reversed, the Latter Filling More Than Three-Fourths the Requirements. In* 1923, *due to heavy demand, beehive coke made a temporary recovery of a portion of the lost tonnage*

Production of By-product and Beehive Coke in the United States

	Net Tons Produced			Per Cent of Total Output	
	By-product	Beehive	Total	By-product	Beehive
1913...	12,714,700	33,584,830	46,299,530	27.5	72.5
1915...	14,072,895	27,508,255	41,581,150	33.8	66.2
1917...	22,439,280	33,167,548	55,606,828	40.4	59.6
1918...	25,997,580	30,480,792	56,478,372	46.0	54.0
1919...	25,137,621	19,042,936	44,180,557	56.9	43.1
1920...	30,833,951	20,511,092	51,345,043	60.0	40.0
1921...	19,749,580	5,538,042	25,287,622	78.1	21.9
1922...	28,550,545	8,573,467	37,124,012	76.9	23.1
1923...	37,597,664	19,379,870	56,977,534	66.0	34.0
1924...	33,995,000	9,668,000	43,663,000	77.9	22.1

Merchandise exports from the United States in April are reported by the Department of Commerce at $400,000,000, making a total of $4,171,817,000 for the ten months of the fiscal year. These figures compare with $346,936,000 for April, 1924, and with $3,669,572,000 for the ten months last year. The excess of exports over imports in the ten months this year has been $997,332,000, or nearly 50 per cent above last year's excess of $692,523,000.

CLOSES UNION MINES

Coal Operators Give Up Competition with Mines at 30 Per Cent Lower Wages

The Pittsburgh Coal Co. in the past week has suspended operations at one of its two active union mines and by the end of this week will have shut down the one remaining union unit. Not only this company but most of the other producing companies in western Pennsylvania and southern Ohio, which signed the agreement with the United Mine Workers of America at the conference in Jacksonville, Fla., in February, 1924, to run until April, 1927, have about given up the struggle of trying to compete with the non-union mines, which are being operated on wage scales at least 30 per cent below the rates called for by the union scale.

Only a few of the union mines now are in production and the present demand, which is seasonably small, is being largely supplied by non-union mined coal. C. J. Albasin, secretary Pittsburgh Vein Coal Operators' Association, has compiled figures of the movement of coal to Lakes in April, which show that of the 1,800,000 tons handled at 12 Lake ports only 240,000 tons were produced in union mines, the remainder being supplied chiefly by the non-union West Virginia and Kentucky mines.

New Troy Blast Furnace to Go In Oct. 1

An inspection of the new blast furnace and by-product coke plant of the Hudson Valley Coke & Products Corporation at Troy, N. Y., was made a special event today (Thursday), and a considerable number of visiting guests went to Troy and looked over the property, now in course of construction, and were entertained at luncheon at the Troy Club. The new blast furnace will be blown in about Oct. 1, this year, and the books of the company have been opened for fourth quarter business. The New York office of the company is at 52 Vanderbilt Avenue and an adjoining office has been taken by E. A. Tutein, Inc., of Boston, Philadelphia and New York, the selling agent for Hudson Valley coke and pig iron. The Tutein office in New York has been at 2 Rector Street.

To Organize Welding Society Branch

A special campaign was recently launched in Los Angeles under the direction of Louis R. Ardouin of the United States Steel Products Co. for the organization of a Los Angeles branch of the American Welding Society. Mr. Ardouin is devoting much time to spreading the organization idea throughout the Los Angeles industrial trade and looks forward to the successful consummation of the plan.

Due primarily to the growing importance of the petroleum and gas industry in and around southern California and the increased activity in shipbuilding at San Pedro Harbor, welding has come to be an important division of the Los Angeles metal trades industry.

Youngstown District Activity Well Maintained

YOUNGSTOWN, May 19.—The Youngstown Sheet & Tube Co. has blown out No. 2 blast furnace in its group at Hubbard, Trumbull county, reducing the number of active stacks in the Youngstown district to 22 of a total of 43. The furnaces in commission represent about 60 per cent of the gross iron capacity of the district. The stack just suspended was devoted to production of merchant pig iron.

Generally production in steel-making and rolling mill departments of properties in the district is maintaining the schedule of recent weeks. Of 52 independent open-hearth furnaces, 33 are active, while the Steel Corporation has 20 of its 30 open-hearth furnaces in this area in operation. Bessemer steel plants are averaging 60 per cent, while steel ingot output is holding from 65 to 70 per cent.

Sheet mill schedules show 90 mills under power, as compared with 94 the week previous, but some of the active units are occupied only part-time. Of 18 tube mills, 11 are rolling; four of eight skelp mills are in action; merchant steel bar capacity is active at 70 per cent; strip mills are active at 75 per cent and tin mills at 85 per cent.

The Republic Iron & Steel Co. is operating its plate mill, as is also the Sheet & Tube company its 84-in. plate mill at the Brier Hill works.

At its Girard, Ohio, works, the A. M. Byers Co., Pittsburgh, is operating 88 puddle furnaces and one skelp mill.

The schedules of non-integrated sheet mills show that the Newton Steel Co. has 16 of 20 mills occupied; the Thomas Sheet Steel Co., 10 of 12; the Falcon Steel Co. and the Mahoning Valley Steel Co., each eight units, representing their full complements; and the Waddell Steel Co., five of seven mills.

The Trumbull Steel Co. is maintaining its rolling mill departments active at a 75 per cent rate.

Timken Company to Make Gilliam Bearings

The Timken Roller Bearing Co., Canton, Ohio, has purchased the plant and business of the Gilliam Mfg. Co., Canton. The physical assets of the Gilliam Co. were offered for sale to the Timken company and the latter company decided that the coordination of manufacturing capacity, processes and patents would be of advantage to both its customers and itself. The Timken company will continue to operate the Gilliam plant where the line of Gilliam bearings will be produced.

To Electrify Carnegie's Upper Union Works

YOUNGSTOWN, May 19.—The Carnegie Steel Co. has ordered the bar mills at the Upper Union works, Youngstown, to be electrified, and the work will proceed as rapidly as the equipment can be secured and installed. The company's merchant bar mills at the McDonald works in Trumbull county, nearby, are fully electrified, and three new units now being installed will be operated by electric drive, power being furnished by the Ohio works of the company at Youngstown, and transmitted over a steel-tower transmission system. The order to improve the Upper Union mills indicates the company's intention of maintaining this plant in operation, instead of abandoning it, as was reported some time ago.

To Build Steel Warehouse

LOS ANGELES, May 15.—Plans for the erection of a modern steel warehousing plant on a 5-acre tract of land on Santa Fe Avenue and Fifty-fifth Street in the industrial district of Los Angeles, were announced last week by W. B. Simpson, president A. M. Castle & Co., Chicago, who recently took over the plant and business of Little & Robertson in Los Angeles.

D. P. Little, who is vice-president, is now making a tour of various warehouses in New York, Chicago, Philadelphia and other eastern cities, with a view of incorporating their best features in the new plant at Los Angeles.

Standardizing Cotton Ties

WASHINGTON, May 19.—At a meeting here yesterday at the Department of Agriculture, called at the suggestion of the American Cotton Shippers' Association, a resolution was adopted in which the meeting went on record as urging manufacturers of cotton ties to adopt a 45-lb. bundle of thirty pieces including buckles as the standard. The conference action on this particular subject was accepted largely as giving formality to the present practice.

The Hendrick Manufacturing Co., Carbondale, Pa., maker of steel gratings and flooring and non-slipping stair treads and ladder steps, is now making and selling Mitco grating.

Machinery Markets and News of the Works

LARGE RAILROAD ORDERS

Union Pacific Buys $400,000 Worth of Tools at Chicago

Illinois Central Expected to Place Orders at Any Time—General Business, However, Continues Quiet

THE Union Pacific System has bought machine tools costing about $400,000. Orders were placed last week in Chicago. The Illinois Central contemplates buying soon. Other railroad buying is of a minor character and some that was in prospect, such as the Burlington list, is not being acted upon very promptly and purchases may be postponed indefinitely. The Chicago, Milwaukee & St. Paul has prepared a program, but so far has issued only one inquiry.

General buying of machine tools is very light. A complaint in the New York market is that demand for used tools has also declined. This is somewhat unusual, as buying of used tools is frequently very good when new tools are not in active demand. Large numbers of used tools are still being dumped on the market. Hundreds of such tools are being disposed of this week at a plant at East Orange, N. J.

Some Cincinnati manufacturers are reported to have increased manufacturing schedules since May 1. There has been an improvement in export buying, Germany and Italy both having yielded fair-sized orders. A Cleveland manufacturer has sold seven turret lathes for shipment to England and four for Czechoslovakia. A Japanese railroad has bought a car-wheel lathe.

New York

NEW YORK, May 19.

DEMAND for second-hand as well as for new tools is at a low point. This is somewhat unusual in that the sale of used tools frequently is good when business in new tools is lagging. However, users of tools are interested only in absolute requirements, and as these are few in the present state of business the machine tool trade of this district is exceedingly dull. Large numbers of used tools are still being thrown onto the market, the sale this week of the entire equipment of the Simms Magneto Co. plant at East Orange, N. J., being an example of the liquidation that is still going on in various industries. Hundreds of tools, many of them said to be in very good condition, are offered at the Simms plant and their sale will undoubtedly have a further depressing effect on demand for new tools within the immediate future. Export buying is scattered. There are no large orders, but orders for single tools are coming from various countries. The Japanese Imperial Railways have bought a car-wheel lathe of an American manufacturer.

The Coal Traders, Inc., 2 Rector Street, New York, has leased property at 106th Street and the East River, 100 x 187 ft., and will establish a coal storage and distributing plant, installation to include silos, bins, conveyors, loaders and other equipment, estimated to cost $75,000.

The J. D. Johnson Co., Inc., Fifth and Washington Avenues, Long Island City, plumbing equipment and supplies, has plans for a one-story storage and distributing works, with shop department, 90 x 198 ft., to cost approximately $45,000. Moore & Landsiedel, 148th Street and Third Avenue, New York, are architects.

The Adirondack Power & Light Corporation, Amsterdam, N. Y., has concluded arrangements for the purchase of the Warrensburg Electric Light Works, Warrensburg, N. Y., and the Bolton Light & Power Co., Bolton, N. Y. Plans are under way for extensions in the districts served by the acquired utilities, and the installation of additional power and line equipment.

The New York Edison Co., 130 East Fifteenth Street, New York, is considering preliminary plans for a one-story mechanical and electrical shop on East Forty-first Street, near the East River.

The Packard Motor Car Co. of New York, Broadway and Sixty-first Street, has acquired property at Atlantic and Classon Avenues, Brooklyn, and will have plans drawn for a service, repair and operating branch, two-stories estimated to cost $400,000 with equipment. The entire second floor will be given over to the repair and mechanical departments.

M. Abbott's Sons, 137 Eighth Avenue, New York, contractors for heating equipment, roofing, etc., have purchased the four-story building, 25 x 92 ft., at 332 West Twenty-first Street, and will remodel for a new works.

A one-story power plant will be constructed by the Methodist Book Concern, 150 Fifth Avenue, New York, at its proposed four-story printing and publishing plant at Dobbs Ferry, N. Y., 200 x 200 ft., estimated to cost $650,000, for which plans are being completed by Visscher & Burley, 363 Lexington Avenue, New York, architects. C. A. Fuller, 347 Fifth Avenue, New York, is mechanical engineer.

The Detroit Cadillac Motor Co., 1881 Broadway, New York, has filed plans for a five-story service, repair and garage building at 737-59 Atlantic Avenue, Brooklyn, 113 x 178 ft., to cost about $400,000 with equipment. Charles E. Biege, 103 Park Avenue, New York, is architect.

The Peter J. McGovern Trucking Co., 637 West Fiftieth Street, New York, has awarded a general contract to R. J. Murphy, 405 West Fifty-seventh Street, for a two-story automobile service, repair and garage building, 65 x 100 ft., at 641 West Fiftieth Street, for company motor trucks and cars estimated to cost $40,000. Ross & McNeil, 46 West Twenty-fourth Street, are architects.

The Okonite-Callender Cable Co., Inc., Paterson, N. J., organized last fall to manufacture special electric cables, etc., is pushing work on its new factory and proposes to have it ready for operation in July. Special machinery will be installed in several departments. An electrical laboratory is included in the plans.

The Bayonne Casket Co., 288 Clark Street, Bayonne, N. J., will soon take bids for a new two-story plant, 75 x 100 ft., to cost $35,000. Kelly & Gowan, 921 Bergen Avenue, are architects.

The Board of Education, Montclair, N. J., F. P. Reagle, secretary, is taking bids until June 8, for manual training shop supplies, manual arts equipment, and other apparatus for the local schools. List is on file at the office of the board, 22 Valley Road.

The Passaic County Township Committee, Little Falls, N. J., is taking bids until June 1 for two motor-driven centrifugal pumps and accessory equipment for a proposed pumping plant for the municipal sewage system. H. J. Harder, 129 Market Street, Paterson, N. J., is engineer. B. S. Briggs is township clerk.

The Aricone Electric Plating Co., 223 Eighteenth Street, West New York, N. J., will soon ask bids on a general contract for a new two-story plant at Eighteenth and Hudson Streets, 80 x 100 ft., to cost $47,000. A. De Paolo, 108 Eighteenth Street, is architect.

The Crane Market

FEW new inquiries are appearing in either the overhead or locomotive crane fields, but most of the recent requests for prices are active and a continued fair volume of sales is expected. Among recent sizable inquiries for overhead cranes is a list from the Chesapeake & Ohio Railroad, included in a construction contract. Bids are being submitted to contractors, including the Foundation Co., 120 Liberty Street, New York; Public Service Production Co., Newark, N. J.; James Stewart & Co., 17 East Forty-second Street, New York; Wilbur G. Hudson Corporation, 50 Church Street, New York, and the M. A. Long Co., Baltimore, Md. The list includes a 10-ton, 35-ft. 10½-in. span hand power crane, 15-ton, 84-ft. 8½-in. span 3-motor crane, a 2-ton mast jib crane with electric hoist and a 2-ton hand power wall crane and 28 one-ton chain blocks.

The city of New York is accepting bids on a 2-ton hand power transfer crane for a destructor plant at Rivington Street, New York. The two 25-ton overhead cranes for the Clinchfield Railroad Co., Johnson City, Tenn., being bought by Dwight P. Robinson & Co., New York, are expected to close in a few days. The West Virginia Pulp & Paper Co., New York, is expected to purchase a 2-ton, 46-ft. span, single I beam hand power crane this week.

Among recent purchases are:

New York Central & Hudson River Railroad, two 20-ton and one 25-ton locomotive cranes from the Brown Hoisting Machinery Co. and three 25-ton locomotive cranes from the Industrial Works.

General Electric Co., Schenectady, N. Y., a 10-ton, 70-ft. span electric crane for West Philadelphia (leaving two 10-ton cranes still pending) from an Eastern builder.

Phoenix Utility Co., 71 Broadway, New York, a 10-ton, hand power crane from the Cleveland Crane & Engineering Co.

Warner Sand Co., Tullytown, Pa., a 30-ton used Industrial locomotive crane from Philip T. King, New York.

Hall Planetary Thread Milling Machine Co., Philadelphia, three 3-ton, 9-ft. 6-in. span, 1-motor cranes from Alfred Box & Co.

Brooklyn & Manhattan Transit Co., Brooklyn, N. Y., four 1½-ton traveling electric wall cranes and one 5-ton, 59-ft. 10-in. span electric crane from Alfred Box & Co.

National Tube Co., Pittsburgh, a 10-ton overhead crane for its Lorain, Ohio, works, from Manning, Maxwell & Moore, Shaw Electric Crane Works.

De Nigris Brothers, New York, a 5-ton, 30-ft. span, 3-motor overhead crane previously reported as awarded, was purchased from the Roeper Crane & Hoist Works.

Pennsylvania Glass Sand Co., Lewistown, Pa., an 8-ton, 23-ft. 6-in. span hand power crane from the Roeper Crane & Hoist Works.

Scott Paper Co., Chester, Pa., a 2-ton, 1-motor, single I beam crane and two 3-ton hand power cranes, all 44-ft. 4-in. span, from the Roeper Crane & Hoist Works.

Philadelphia Paper Co., Philadelphia, a 5-ton, 51-ft. 2-in. span hand power crane from the Roeper Crane & Hoist Works.

Rudel-Belnap Machinery Co., Ltd., Toronto, Canada, a 20-ton, 27-ft. 10-in. span hand power crane from the Roeper Crane & Hoist Works.

The Specialty Handle Mfg. Co., 115 New Jersey Railroad Avenue, Newark, N. J., has asked bids on a general contract for a two-story addition, 38 x 40 ft., including improvements in the present factory at 16-18 Mott Street, to cost $25,000. Frank Grad, 1023 Board Street, is architect.

Mount, Inc., 148 Mulberry Street, Newark, manufacturer of mechanical belting, has leased the entire three-story building at 147 New Jersey Railroad Avenue, totaling about 9000 sq. ft. of floor space, and will remodel for a new plant.

The Eastern New Jersey Power Co., Allenhurst, N. J., has plans for extensions and improvements in its steam-operated electric power plant, 66 x 112 ft., including the installation of additional equipment. It has acquired the Electric Light & Power Co., Highstown, N. J., and the Jamesburg Electric Co., Jamesburg, N. J., and contemplates extensions in these districts.

The York Machinery & Supply Co., 12 North Penn Street, York, Pa., is in the market for a used 28 in. x 36 ft. quick change engine lathe, arranged for motor drive.

The Stanley Everett Corporation, 27 Thames Street, New York, recently incorporated with $20,000 capital stock, owns patents on radio parts and tools. The company will have drop forgings made by contract. George C. Tucker is president.

The Jansson Engineering Co., Woolworth Building, New York, is in the market for 12 hydraulic presses, suitable for bakelite molding.

Philadelphia

PHILADELPHIA, May 18.

CONTRACT has been let by the Certain-Teed Products Corporation, Second and Erie Streets, Philadelphia, manufacturer of roofing products, etc., to Stofflet & Tillotson, Wesley Building, for extensions and improvements in its plant to cost about $30,000, replacing a recent fire loss.

The O'Brien Cooperage Co., Wharton and Water Streets, Philadelphia, has awarded a contract to the Fred A. Havens Co., 845 North Nineteenth Street, for a two-story addition, 60 x 105 ft., to cost about $45,000 with equipment. Charles E. Oelschlager, 1615 Walnut Street, is architect.

In addition to its proposed extension to the No. 4 building at its plant at Sixty-ninth Street and Elmwood Avenue, Philadelphia, the General Electric Co., Witherspoon Building, will ask bids at once for remodeling a five-story factory at Seventh and Willow Streets, estimated to cost $55,000. E. A. Vogel, company headquarters, Schenectady, N. Y., is in charge.

The Philadelphia Tidewater Terminal, 10 Chestnut Street, Philadelphia, is planning the establishment of a lumber storage and distributing plant at its waterfront terminal property, with installation of conveying, loading and other equipment, to cost approximately $100,000. Harvey C. Miller is president.

The Empire Auto Top Co., Race and Twenty-second Streets, Philadelphia, has leased the two-story building now in course of erection at Forty-fifth Street and Woodland Avenue for a new factory, and plans to take possession at an early date.

The Cattie Brothers Corporation, 1712 North Ninth Street, Philadelphia, operating a metal-working and galvanizing plant, has disposed of its present property to Bayuk Cigars, Inc., and will remove to the new site recently purchased at Tioga and Witte Streets, where operations will be increased. Contract for the new factory has been awarded to the Thompson-Lockhart Co., 6 South Fortieth Street. It will cost in excess of $75,000.

The Lincoln Way Auto Repair Shop, 6201 Girard Street, Philadelphia, has plans for a two-story machine shop and service works, 50 x 50 ft., for which foundations will soon be laid.

The Delling Motors Co., White Horse Pike and Park Avenue, West Collingswood, N. J., is making ready for early production at its new plant now nearing completion to be given over to the manufacture of steam-driven automobiles and parts. It is said that the entire output for the first 12 months has been contracted for.

Preliminary plans are under consideration for the establishment of a County vocational school at Camden, N. J., to cost $100,000 with equipment, the expense to be defrayed jointly by the Board of Freeholders and the State. Charles S. Albertson, county superintendent of schools, is at the head of the project.

The Lycoming Foundry Co., Williamsport, Pa., manufacturer of iron and steel castings, is planning a one-story addition, 80 x 200 ft.

The Philadelphia & Reading Railroad Co., Philadelphia, has asked bids on a general contract for a one-story freight car repair shop, 335 x 880 ft., at Reading, Pa. Otto Harold is company architect.

The Union Paper Mills Co., New Hope, Pa., has plans for a one-story power house for which foundations will soon be laid. W. E. S. Dyer, Land Title Building, Philadelphia, is architect and engineer.

Fire, May 8, destroyed a portion of the oil storage and distributing plant of the Atlantic Refining Co., Womelsdorf, Pa., with loss estimated at $30,000 including equipment. Rebuilding plans are under advisement. Headquarters of the company are at 260 South Broad Street, Philadelphia.

Stone Brothers, New Cumberland, Pa., manufacturers of paper boxes and containers, have purchased the plant of

the Hancher Box Co., on Second Street, which it will occupy for extensions.

The General Die Casting Co., Stock Exchange Building, Philadelphia, recently organized, has begun the construction of a plant. J. N. Pomens is vice-president.

The Tepco Stoker Co., with office and works at Seventh and Ontario Streets, Philadelphia, has been formed to manufacture the two types of Roach underfeed stokers, formerly made by the Roach Stoker Co., through the Tioga Engineering & Pattern Co., which also made the overfeed stokers. The business was purchased by A. G. Schieher, who will be president of the new company, and Joseph T. Laird. The latter, who was connected with the Wilkinson Stoker Co. for 30 years, will be secretary-treasurer. The company has equipment for turning out several stokers per week.

The Fuller Lehigh Co., Fullerton, Pa., is in the market for a second hand locomotive for yard use, preferably one of 30 to 45-ton capacity, standard gage, with separate fender and four or six coupled drivers.

The Alloy Metal Wire Co., Moore, Pa., is inquiring for one 12-in. or 14-in. x 18 in. or 20-in. wide rolling mill; two 3-in. x 6-in. rolling mills; one squaring gear for 18-in. x 3/16-in. material.

Fire, May 8, destroyed the plant and equipment of the Diamond Ice & Cold Storage Co., Wilmington, Del., with a loss of $90,000. Plans for rebuilding are under way. Electrical refrigeration and transmission and conveying machinery will be required.

South Atlantic States

BALTIMORE, May 18.

THE Linthicum Stone Corporation, Baltimore, organized with a capital of $1,000,000, has acquired the plant of the Stuart R. Carr Foundry Co., Boston Street and Montford Avenue, and will remodel for the production of artificial stone, such as granite, marble, etc., with grinding, cutting, finishing and other departments. It has also secured the Beaver Dam quarries at Cockeysville, Md., for raw material supply. Frank H. Linthicum is president and general manager; H. A. Yerkes, formerly vice-president of the Columbia Phonograph Co., is vice-president, treasurer and secretary.

Manual training equipment will be installed in the two-story and basement high school to be erected at Cumberland, Md., estimated to cost $285,000, for which superstructure will begin at once. Smith & May, Calvert Building, Baltimore, are architects. The W. J. Morley Construction Co., 321 North Center Street, Cumberland, has the general building contract.

The Baltimore & Ohio Railroad Co., Baltimore, has plans for a one-story addition at its Mount Clare car and locomotive shops, 68 x 126 ft., to cost $35,000 with tools and machinery.

The Borden Brick & Tile Co., Goldsboro, N. C., has acquired about 60 acres at Sanford, N. C., for the construction of a plant to manufacture hollow building tile, face brick and kindred products, estimated to cost about $150,000 with machinery.

The Board of Baltimore County Commissioners, Towson, Md., is asking bids until June 1 for one 300,000 gal. capacity elevated steel water tank, with steel tower and complete accessories. A. E. Walden is chief engineer of the Baltimore County Metropolitan District. John R. Haut is clerk of the board.

The Temple Foundry Co., Alexandria, Va., has acquired a local building which it will remodel and equip. V. B. Beagle is president.

The J. G. Skelton Co., Railway & Power Building, Richmond, Va., has inquiries out for a 7-ton electric-operated traveling crane, 56-ft. span, with runway 160 ft. long.

The Georgia Railway & Power Co., Atlanta, Ga., has arranged a program for hydroelectric power development to cost in excess of $25,000,000, over a five-year period, including power dams, generating stations and transmission lines. It is said that close to $7,500,000 will be expended during the present year.

The Hackley-Morrison Co., 1708 Lewis Street, Richmond, Va., has inquiries out for one 60 to 80-hp. Scotch marine type boiler; also, for a number of 40-hp. and smaller capacity electric motors.

The Bryson City Pump Works, Inc., Bryson City, N. C., will begin work this month for the first unit of its proposed plant, 50 x 100 ft., a large part of the structure to be equipped for wood-turning and general woodworking. A power house will be built. I. K. Stearns is vice-president.

The Baltimore Valve Co., Sinclair Lane and Patterson Park Avenue, Baltimore, has completed organization with a capital of $100,000, to take over the plant and property of the company of same name. It purposes to establish departments for the production of steel, iron, brass and bronze castings. It is headed by Edwin F. A. Morgan, Frederick W. Brune and W. Fairfield Peterson.

The Hygeia Ice & Fuel Co., Spartanburg, S. C., contemplates the erection of a car-icing and refrigerating plant at Hayne, near Spartanburg. A coal storage plant will also be erected. A. B. Parsons is in charge.

The Wilson-Hock Co., City Point, Va., machinery dealer, has inquiries out for a coal bunker and coal-elevating equipment; one turbine pump, motor-driven, with rating of 1650 gal. per min., to operate under a 65-ft. head; one turbo-generator, 500 to 750 kw. capacity, three-phase, 60-cycle; a number of motors, 25 to 50 hp. capacity, with base pulleys, starting equipment, etc.; two air compressors, 600 to 800 cu. ft. per min., and 40 to 75 cu. ft. per min., first noted to be duplex type, steam-driven, 100 lb. working pressure; one double drum hoisting engine, with swinging attachment, 8 x 10 in., or larger; and one motor-generator set, 75 to 100 kw., d.c. generator, slip ring motor.

The South Boston Mfg. Co., South Boston, Va., manufacturer of wagons and parts, will rebuild the portion of its plant recently destroyed by fire, with loss approximating $22,000 including equipment.

The Road Machinery Mfg. Corporation, 409 MacBain Building, Roanoke, Va., has been organized with capital stock of $150,000 to manufacture road machinery, specializing in maintenance equipment. Work for the present will be done by contract but the company expects later to build its own plant. C. L. Gravett is secretary-treasurer.

Pittsburgh

PITTSBURGH, May 18.

MACHINE tool business does not improve in this district. The Carnegie Steel Co. was a recent purchaser of four Buffalo punches and shears for its Edgar Thomson works, and the Standard Steel Propeller Co. closed for several tools, including milling machines, grinders and a slotter. Otherwise, business has been largely in single tools. New inquiries have not been very numerous.

A general contract has been awarded by the Standard Sanitary Mfg. Co., Bessemer Building, Pittsburgh, to the Joseph F. Lowe Co., Arrott Building, for a five-story and basement storage and distributing plant, 90 x 250 ft., to cost approximately $350,000 with equipment. The Hunting-Davis Co., Century Building, is architect.

The Manchester Auto & Machine Co., 1216 Liverpool Street, Pittsburgh, local representative for the Atterbury and Commerce automobile trucks, has purchased property on Manchester Avenue, 154 x 180 ft., for $30,000, as a site for a two-story service, machine repair and garage, to cost $200,000 with equipment.

The Board of Education, Sewickley, Pa., is considering the installation of manual training equipment in its proposed three-story and basement high school to cost approximately $150,000, for which superstructure will soon begin. P. C. Dowler, Magee Building, Pittsburgh, is architect.

The Pal-Mar Toy Co., Pittsburgh, has leased the three-story building at 108 Third Avenue, for a local plant.

The Builders' Steel Works, Inc., 4130 Liberty Avenue, Pittsburgh, has preliminary plans under way for a one-story factory on Howley Street, to cost $45,000 with equipment.

J. M. McCoach & Co., 1301 Seventh Avenue, Huntington, W. Va., have awarded a general contract to C. W. Hancock & Son, Krise Building, Lynchburg, Va., for a six-story addition to their cold storage and refrigerating plant, 115 x 136 ft., to cost about $175,000 with equipment. S. P. Heger is president.

The District Board of Education, Mannington, W. Va., is considering the installation of manual training equipment in a proposed local high school, estimated to cost more than $100,000, for which Stephen W. Ford, Latstetter Building, Clarksburg, W. Va., architect, will prepare plans.

The West Penn Railways Co., West Penn Building, Pittsburgh, is planning the construction of a two-story freight storage and distributing building, 60 x 410 ft., at Connellsville, Pa., with material-conveying, hoisting and other handling machinery, estimated to cost $100,000.

The Guyan Machine Shops, Logan, W. Va., machinery dealer, has inquiries out for cast drums, about 19-in. in diameter and 24-in. long, suitable for 3-in. shaft, for crushing purposes.

Buffalo

BUFFALO, May 18.

CONTRACT has been awarded by the North East Electric Co., 348 Whitney Street, Rochester, N. Y., manufacturer of electrical equipment and supplies, to the Turner Construction Co., Buffalo, for a six-story addition, 107 x 145 ft.

The Rex Engineering Co., Dunkirk, N. Y., manufacturer of pressing and baling machinery, is planning for the early removal of its plant to Canistota, N. Y., where a branch factory heretofore has been operated. The business will be concentrated at this location and arrangements made for increased production.

The Davis Furniture Co., 119 Cheney Street, Jamestown, N. Y., will soon take bids for a new four-story plant, 55 x 80 ft., to cost about $55,000 with equipment. Beck & Tinkham, Phillips Building, are architects. W. C. Davis heads the company.

W. N. Denler, 519 Glenwood Avenue, Buffalo, operating a sheet metal works, is said to be planning the purchase of equipment for installation in a new shop.

The Selden Truck Corporation, Rochester, N. Y., recently organized, will take over the local plant and business of the Selden Motor Vehicle Co. and the Selden Motor Truck Sales Co., manufacturers of motor trucks and parts, both of which have been dissolved. The new company will be operated under the direction of the Fabric Body Corporation, Detroit, and plans for increase in output. A. S. More is president and general manager; S. P. Gould, secretary, and E. B. Osborn, treasurer, all of Rochester.

Bids are being asked by the Shaughnessey Knitting Co., Moulton Street, Watertown, N. Y., for a new one-story power house, 40 x 50 ft. Thomas Phillips, 228 Arsenal Street, is architect.

Officials of the Buffalo General Electric Co., Buffalo; Niagara Falls Power Co., Niagara Falls; Niagara, Lockport & Ontario Power Co., Buffalo, and the Tonawanda Power Co., North Tonawanda, have completed plans for a consolidation of the companies and will organize a new holding company to be known as the Buffalo, Niagara & Eastern Power Corporation. The combined assets are said to total $150,000,000. The new organization has plans for expansion in power generating facilities and transmission lines, with interconnection between the four utilities. G. R. Huntley, heretofore president Buffalo General Electric Co., will be chairman of the board of the new company, with J. F. Schoellkopf as chairman of the executive committee, and Paul A. Schoellkopf, president.

Bids are being asked on a general contract by the Erie Enameling Co., Inc., Erie, Pa., for a one-story brick and steel factory, to cost $45,000 exclusive of equipment. H. R. Spencer is secretary.

Electrical pumping and other equipment will be required by the Fredonia Oil Co., Fredonia, N. Y., in connection with the erection of an oil pumping station.

The Town Board, Amherst, N. Y., has awarded contract to W. L. Lose, Tonawanda, N. Y., for a sewage disposal plant to cost $190,000, for which electrical pumping and other machinery will be required.

Property and equipment of the Erie-Buffalo Tube Co., West Eighteenth Street, Erie, Pa., have been acquired by the Mayer Brothers Construction Co., Erie, for $25,000. It is planned to erect several new buildings and later place the plant in operation.

Detroit

DETROIT, May 18.

PLANS are under way by the Gas Engineering Service Co., Owosso, Mich., for extensions and improvements in its plant to cost about $100,000 including additional equipment.

The Ford Motor Co., Detroit, plans the installation of a new machine shop and foundry at its plant at Iron Mountain, Mich. It has preliminary plans under advisement for the erection of new assembling works at Mexico City, Mex., to cost approximately $500,000 with equipment.

The Jarvis Engineering Works, Inc., 901 River Street, Lansing, Mich., has construction in progress on an addition for considerable increase in capacity.

The Briggs Mfg. Co., Detroit, manufacturer of automobile bodies, has acquired the plant of the American Auto Trimming Co., 3100 Meldrum Avenue, comprising about 500,000 sq. ft. of floor space, for a branch works. It also recently acquired the plant of the Timken-Detroit Axle Co. on Waterloo Avenue, and will use the property for like service.

The Ontonagon Fibre Co., Escanaba, Mich., has awarded a general contract to W. P. Milford, Calumet, Mich., for the erection of its proposed paper mill, to cost $150,000.

The Board of Education, Charlotte, Mich., plans the installation of manual training equipment in its proposed two-story and basement senior and junior high school, estimated to cost $350,000, for which bids will be asked soon on a general contract. E. S. Batterson, Hanselman Building, Kalamazoo, Mich., is architect.

The Buick Motor Co., Detroit, is arranging for the transfer of its closed body manufacturing plant from Detroit to Flint, Mich., where the Nos. 6, 7 and 10 plants will be provided with equipment to handle this complete production. It is proposed to increase the present output by about 250 bodies per day. Men now engaged at the Detroit plant will also be transferred to the new location. The company is reported to be planning to close the Detroit body works.

The Mount Clemens Sugar Co., Mount Clemens, Mich., is planning for enlargements in its mill to increase the output to about 1000 tons a day. The work is estimated to cost $250,000 including equipment.

The Hydro Check Corporation, Monroe, Mich., has been organized with $25,000 capital stock to manufacture shock absorbers. Plant and equipment are adequate for present needs. J. G. Zabel is secretary.

The Metalcraft Co., Detroit, is in the market for five tons of 1½-in. No. 16 gage band iron.

The Lavigne Brass Co., 5457 Lincoln Avenue, Detroit, has been incorporated to manufacture valves and fittings, for which equipment is being installed, and expects to begin production in about six weeks. It will organize distribution through jobbers. F. E. MacArthur is one of the principals.

Cincinnati

CINCINNATI, May 18.

INCREASED production of machine tools is reported in this market. While conditions are spotty, several large manufacturers have gradually increased their output in the past two weeks. Operations, however, cannot be considered satisfactory when the market is viewed as a whole, but there has been considerable improvement since May 1. Foreign business, especially from Europe, is a contributing factor of considerable importance in keeping the larger plants operating on their present scale. Germany and Italy have both yielded larger orders to local manufacturers. More buying is being done by the automobile manufacturers, but railroad business is meager. Heavy machinery is not moving as well as the lighter machines. One large manufacturer states that sales of small machine tools are the best in five years. Considerable business is pending and local manufacturers believe that further improvement can be expected shortly.

The Republic Tool Products Co., Dayton, Ohio, plans the construction of an addition to its plant on site recently acquired at 915 Valley Street.

Contract has been let to the M. U. Roche Construction Co., Southern Ohio Building, by the Cincinnati *Times-Star*, Cincinnati, for a three story automobile service, repair and garage building, 55 x 90 ft. and 30 x 47 ft., for company motor trucks and cars, to cost $125,000. Samuel Hannaford & Son, Dixie Terminal Building, are architects.

The High View Mining Co., Cromwell, Ky., Clarence James, secretary, has about 700 acres at Prentiss, Ky., and plans the installation of electric-operated mining machinery, including mechanical fan, pumping unit, etc. It is expected to make purchases in the fall.

The Kentucky Utilities Co., Louisville, is planning for the complete electrification of the waterworks plant at Paris, Ky., including the installation of motor-driven units, controls, etc.

Alexander M. Robinson, Georgetown, Ky., dealer, has inquiries out for galvanized steel tanks for gasoline storage, averaging about 20,000 gal. capacity each.

The Board of Education, Lima, Ohio, is considering the installation of manual training equipment in a proposed two-story and basement high school estimated to cost $150,000. Thomas McLaughlin & Associates, Savings Building, are architects.

The Johnson Mfg. Co., Urbana, Ohio, manufacturer of cans and other metal containers, has awarded a general contract to A. J. Poss, Springfield, Ohio, for the first unit of a new plant, one-story, 80 x 175 ft., to cost $35,000.

Other units will be built later. C. Johnson heads the company.

The Tennessee Electric Power Co., Chattanooga, Tenn., has work in progress on extensions in its Hale's Bar steam-operated electric power plant, and will install additional equipment for considerable increase in output, estimated to cost $500,000. Awards are being made for boilers, stokers and other apparatus. The company is also planning the construction of a repair, service and garage building for company motor trucks and cars.

The Jordan Mfg. Co., Monticello, Ga., manufacturer of bobbins and other textile mill equipment, will begin the erection of the first unit of its proposed plant on East Maple Street, Johnson City, Tenn., estimated to cost $75,000 with equipment. Other units will be built later. C. H. Jordan is president.

The Bruns Lime Works, Inc., Woodville, Ohio, is making ready to begin work on the first unit of its proposed local plant for the production of builders' and other lime products, to include a power house and machine shop. It will cost more than $650,000 with equipment. Charles W. Kaemming is president.

The Kentucky & West Virginia Power Co., Hazard, Ky., has begun construction of transmission lines and a transformer station at McRoberts, Ky., at an estimated cost of $75,000. It is reported to be contemplating construction of new lines at a cost of $400,000.

The Norfolk & Western Railroad will soon begin expansion of its yards at East Portsmouth, Ohio. Yardage facilities will be doubled, many of the present buildings will be rearranged and several new structures will be erected. The board of directors of the railroad has authorized an expenditure of $5,000,000 on the improvement.

Chicago

CHICAGO, May 18.

THE Union Pacific System has closed against its pending list which will call for an expenditure of $400,000. The Illinois Central is expected to place orders at any time, but there is little prospect of early action on the Burlington list except for a few items for which there is pressing need. The Santa Fe has put out two additional inquiries calling for a 48 x 48-in. x 12 ft. heavy-duty type planer and a small turret lathe. The Chicago, Milwaukee & St. Paul has prepared a program, but thus far has only put out one inquiry, namely for a journal truing lathe for mounting car wheels and axles. The Pullman Car & Mfg. Corporation, Chicago, is considering the purchase of tools for its plant at Richmond, Cal. Among the machines on which tentative figures have been taken are a 14-in. engine lathe, a 3-ft. radial drill, two buffing machines, a forging machine and a planer.

The Grand Rapids, Mich., and Rockford, Ill., school lists have not yet been closed. Dealers report a fair volume of scattered orders for individual machines, but find that much prospective business is being unduly delayed. But for the fact that most buyers have a case of "nerves," it is thought that business would be much more active. A return of stability in the iron and steel market would be a helpful influence.

Contract has been awarded by the Arrow Mill Co., 2326 South Western Avenue, Chicago, manufacturer of storage battery equipment, to Nathan Flyer, 2829 Eastwood Avenue, for its proposed one-story addition 81 x 340 ft., estimated to cost $75,000. Sidney Minchin, 53 West Jackson Boulevard, is architect. H. B. Jameson is president.

The Western Public Service Co., Denver, Colo., operating 32 electric power plants, 22 ice manufacturing plants and other utilities, is disposing of a bond issue of $4,200,000, a portion of the proceeds to be used for extensions and improvements. E. C. van Diest is president.

The Northern Pacific Railway Co., St. Paul, Minn., has plans for nearing completion for its car and locomotive shops, estimated to cost $100,000. O M. Rognan, Railway Building, is architect.

The Board of Education, Gothenberg, Neb., plans the installation of manual training equipment in its proposed two-story senior and junior high school, estimated to cost $180,000, for which it will soon take bids on a general contract. Davis & Wilson, 525 South Thirteenth Street, Lincoln, Neb., are architects.

The Minot Implement Co., Minot, N. D., will begin the erection of a one-story plant, estimated to cost $20,000. J. W. Loftus is manager.

The Maytag Washing Machine Co., Newton, Iowa, manufacturer of electric-operated washing machines and parts, has plans for a six-story addition, 85 x 213 ft., to cost $150,000 with equipment. Henry Raeder, 20 West Jackson Boulevard, Chicago, is architect.

The Illinois Central Railroad Co., Chicago, has awarded a general contract to Joseph E. Nelson & Sons, 3240 South Michigan Avenue, for a new locomotive repair shop and engine house at its Markham yards, to cost more than $100,000 with equipment. F. R. Judd is company engineer of buildings.

The Board of Education, Marengo, Iowa, plans the installation of manual training equipment in its proposed two-story and basement high school, estimated to cost $150,000, for which bids are being received on a general contract until May 28. Doughert, Rich & Woodburn, Valley National Bank Building, Des Moines, Iowa, are architects.

The North Nebraska Power Co., Hebron, Neb., is said to be planning the construction of a hydroelectric generating plant on the Niobrara River, near Spencer, Neb.

The Burlington Specialty Co., care of Glenn F. Cray, 206 Parsons Building, Burlington, Iowa, has been organized with $25,000 capital stock to manufacture accessories for the automotive industry. Large orders have already been taken. Mr. Cray is secretary.

Cleveland

CLEVELAND, May 18.

A LOCAL manufacturer of turret lathes received two export orders during the week, one from England for seven machines and the other from Czechoslovakia for four machines. Business is holding up at about recent volume, with scattering sales mostly of single machines. There is quite a demand from the brass work industry. Buying from the automotive industry continues rather light, being confined mostly to machines for filling in.

The Hobart Mfg. Co., Troy, Ohio, has placed a general contract with Shook & Billiter, 410 Schwind Building, Dayton, for two three-story factory buildings, one 48 x 129 ft. and the other 110 x 129 ft.

The Parr Paint & Color Co., 665 East 103d Street, Cleveland, will erect a three-story factory, 40 x 80 ft. The A. C. Bishop Co., Guardian Building, is architect.

The Ohio State School for Blind, Franklin County, Ohio, contemplates the erection of a boiler house to cost, with equipment, $70,000. The school is under the direction of J. E. Harper, director of the State Department of Public Welfare, Columbus.

George W. Hartzell, Piqua, Ohio, has placed contract for the erection of a $25,000 factory.

A mechanical training shop will be provided in the South high school, Akron, Ohio, for which bids are being taken.

The H. A. Denscher Co., Hamilton, Ohio, has taken bids for additions to its gray iron foundry.

The city of Fostoria, Ohio, has taken bids for additional equipment to its waterworks plant that will include a 3,000,000 gal. steam pump and two 150-hp. return tubular boilers.

Cyril J. Bath & Co., 6900 Machinery Avenue, Cleveland, are inquiring for a style G short throat Cleveland punch.

St. Louis

ST. LOUIS, May 18.

BIDS have been asked by the Multiplex Faucet Co., 7048 Kingsbury Street, St. Louis, manufacturer of faucets and kindred appurtenances, for a two-story plant, 80 x 200 ft., to cost approximately $80,000 with equipment. John M. Travis is president. W. P. McMahon, Buder Building, is architect.

The Taylor Marble & Tile Co., 515 West Pine Street, Oklahoma City, Okla., will begin the erection of a one-story plant, 50 x 75 ft., for cutting, finishing, etc., for which a general contract has been let to the Charles M. Dunning Construction Co., 420½ North Hudson Street.

The Board of Education, Hannibal, Mo., plans the installation of manual training equipment in its proposed two-story central high school, estimated to cost $125,000,

for which superstructure will soon begin. W. B. Ittner, 911 Locust Street, St. Louis, is architect.

The City Council, Cherokee, Okla., is considering plans for extensions in the municipal electric light and power house, including additional equipment, estimated to cost $35,000. Bonds will be issued.

A refrigerating and cold storage plant will be installed in the new packing plant, 45 x 200 ft., to be erected by the Miles Packing Co., Cape Girardeau, Mo., in the South Side section, estimated to cost $85,000. The company recently increased its capital from $25,000 to $125,000 for expansion. A. E. Miles is president.

The City Council, Silver City, N. M., plans the installation of pumping machinery and accessory equipment at its proposed municipal waterworks extension, for which a bond issue of $300,000 has been approved.

The City Council, Frederick, Okla., is considering preliminary plans for extensions and improvements in the municipal electric light and power house, estimated to cost $160,000 including additional equipment.

The Community Power & Light Co., Fort Scott, Kan., is disposing of a bond issue of $1,750,000, a portion of the proceeds to be used for the purchase of electric utilities in the vicinity of Lubbock and Plainview, Tex., and for extensions in plants and transmission system. Wiley F. Corl is president.

The Phillips Petroleum Co., Bartlesville, Okla., has acquired three gasoline plants in the North Texas oilfields, heretofore owned and operated by Roeser & Pendleton, and contemplates extensions to cost $1,500,000 including purchases.

The Electric Light & Power Corporation, recently formed as a subsidiary of the Electric Bond & Share Co., 71 Broadway, New York, is concluding negotiations for the purchase of the Southern Power & Light Co. and subsidiaries, operating in Arkansas, Louisiana and Mississippi. The interests acquired will be consolidated and extensions and improvements made in power plants and system.

The Standard Steel Works, North Kansas City, Mo., is in the market for a double geared, double crank press of capacity, stroke and die space equal to Bliss No. 10-62-in. or larger.

New England

BOSTON, May 18.

SALES of machine tools in this market the past week were not quite as numerous as in the previous week. Most of the selling was done by dealers heretofore on the inactive list, consequently the average for the trade as a whole for the month is better than for the corresponding time in April. Inquiries have fallen off somewhat, but dealers still have a sizable number of prices out on what are considered active prospects. In a number of instances these have reached the purchasing department or management, tools having been specified by operating departments. Among the sales reported the past week, the most important include a new angle iron shear, two automatic lathes and an automatic centering machine, a good sized used punch and a used No. 3 Consolidated press.

Bids closed last week for a one and two-story, 134 x 211 ft. plant on Ashford Street, Boston, for the Electric Storage Battery Co., 720 Beacon Street. Bigelow & Wadsworth, 3 Hamilton Place, are the architects.

Plans will be ready this week for a four-story, 80 x 100 ft. plant to be erected by the Cambridge Rubber Co., 748 Main Street, Cambridge, Mass. John R. Worcester & Co., 79 Milk Street, Boston, are the engineers.

Bids will close May 27 for hydroelectric equipment to be installed by the water supply board, Providence, R. I., at Scituate, R. I., during the summer. Charles T. Main, 200 Devonshire Street, Boston, is the engineer.

A. J. Blackburn, engineer acting for the Boston Elevated Railway Co., 31 St. James Avenue, Boston, is taking bids for a proposed car house at Forest Hills, Boston, for which motors and miscellaneous equipment will be required.

The International Harvester Co., 43 Somerville Avenue, Somerville, Mass., will close bids this week on a four-story and basement, 100 x 140 ft. warehouse and office building on North Beacon Street, Allston, Boston. Plans are private. Conveying equipment will be required.

The S. S. Pierce Co., Tremont Street, Boston, grocer, has awarded contract to Morton C. Tuttle Co., Park Square Building, Boston, for a two-story, 90 x 130 ft. garage and repair shop. Plans and specifications are by the Tuttle company.

Philcox & Sanders, Inc., 192 Post Road, Darien, Conn., has been incorporated to distribute and install heating equipment. It is in the market for pipe, valves, electric pumps, tanks, fittings and a good make of furnace which can be used for oil burning. George N. Philcox is one of the heads.

The Chase Metal Works, Waterbury, Conn., is inquiring for a No. 16 Zeh & Hahnemann percussion power press of 250-ton pressure.

The Condit Electric Mfg. Co., 1377 Hyde Park Avenue, Boston, has plans for an addition to its plant to cost about $45,000, for which a building permit has been issued.

The American Radiator Works, 216 Aborn Street, Providence, R. I., has plans for a one-story machine, repair and service shop to accommodate about 150 cars.

The United Electric Light Co., Springfield, Mass., is contemplating the construction of a new condenser plant at West Springfield, to cost $1,500,000 with machinery. Robert W. Day is president.

Bids will be received by the Water Supply Board, City Hall, Providence, R. I., until May 27, for power equipment for the municipal waterworks, including one 2200 hp. waterwheel for 80-ft. head; one 1500 kw. generator; switchboard, transformers, and accessory equipment; also, one 5-ton and one 20-ton electric cranes. Frank E. Winsor, 661 Westminster Street, is chief engineer. Samuel N. Grammont is secretary of the board.

The Brown & MacPhierson Co., North Haven, Conn., manufacturer of hardware and tools, has acquired a building on the South Colony Road, Wallingford, Conn., and will remodel for a branch plant.

The Salem Electric Lighting Co., Salem, Mass., has applied for permission to issue additional stock of $1,402,200, the proceeds to be used for extensions and improvements in plant and system, including the installation of additional equipment.

The Crompton & Knowles Loom Works, Harris Avenue and Acorn Street, Providence, R. I., manufacturer of textile equipment, will build a one-story addition for a compressor department.

The City Council, Lynn, Mass., will soon ask bids for a two-story automobile service, repair and garage building, 50 x 140 ft., to cost $75,000. A portion will be arranged for storage.

L. Grossman & Sons, 22 School Street, Quincy, Mass., manufacturer of mill supplies, etc., are considering the erection of a two-story plant in the Edwards Meadows section, 100 x 300 ft., to cost $90,000 with equipment.

The Smith-Springfield Body Corporation, West Springfield, Mass., has been organized to take over the company of the same name and the Springfield Body Corporation, with local plant. Plans are being completed for an early resumption of operations at the factory, with production for the manufacture of automobile bus bodies. James N. Swift has been elected president, succeeding C. S. Dame. Hinsdale Smith will be vice-president in charge of engineering.

The Springfield Bronze Co., Inc., 66 Charles Street, Springfield, Mass., has plans for a new one-story foundry and will proceed with work immediately.

The Oxford Paper Co., Rumford, Me., has awarded a contract to F. A. Rumery & Co., 537 Congress Street, Portland, Me., for its one-story addition, 80 x 130 ft., estimated to cost $60,000.

Milwaukee

MILWAUKEE, May 18.

BETTER inquiry the past week was about the the only sign of greater activity in the machine-tool market. Sales remained on about the same level as before, volume being relatively small. While prospects for new business are considered good, a feeling of hesitancy is reflected in the actual placing of orders. Bare necessity governs all purchases. Encouragement is found in the report that shipments of iron and steel products from Milwaukee in April by the Chicago, Milwaukee & St. Paul Railway amounted to 1604 carloads, compared with 1137 cars in 1924. Still, there appears no need of the additional capacity that would make for active demand for tools and equipment. The city of Milwaukee will let the contract for a planer June 3, on which bids were opened May 15.

The French Battery & Carbon Co., Madison, Wis., has engaged J. R. & E. J. Law, architects, Madison, to design

a number of manufacturing and warehousing additions costing about $450,000, which will require miscellaneous machinery, tools and equipment, specifications for which will be ready about June 1. Bids for the construction will be taken May 20.

The Acme Building & Construction Co., 2023 Sycamore Street, Milwaukee, will build an addition for the benefit of the Auto Body Co., manufacturer of passenger and freight carrying bodies for automobiles, which occupies the larger part of the present plant.

Henry Danischefsky, 1484 Humboldt Avenue, Milwaukee, general contractor, will build a $35,000 warehouse and office building, 50 x 120 ft., at 809-811 St. Paul Avenue, and will provide a machine and service shop with new equipment.

The Tessier Sheet Metal Works, Wisconsin Rapids, Wis., have been acquired by E. B. Bennett, Aberdeen, S. D., who takes possession June 1. The new owner has been engaged in manufacturing sheet metal products for many years at Aberdeen.

Indiana

INDIANAPOLIS, May 18.

PLANS are under way by the Union Tank Line, Whiting, Ind., a subsidiary of the Standard Oil Co. of Indiana, for the construction of a new plant on a 65-acre tract, consisting of a one-story car construction and repair shop, 150 x 500 ft.; one-story machine shop and foundry, 60 x 240 ft., and smaller structures, estimated to cost $250,000 with equipment. A department of the works will be equipped for the building of new tank cars.

The Ross Power Equipment Co., Merchants' Bank Building, Indianapolis, machinery dealer, has inquiries out for a locomotive crane, 25 to 30 tons capacity, with clam shell bucket.

Manual training equipment will be installed in the new high school to be erected at Portland, Ind., estimated to cost $175,000, for which superstructure will proceed at an early date. Walter Scholer, Painters' and Decorators' Building, Lafayette, Ind., is architect.

The Fort Wayne Corrugated Paper Co., Fort Wayne, Ind., is planning for the early removal of its local business to its branch factory at Hartford City, Ind., where operations will be concentrated. Equipment will be provided for increased capacity.

The B. E. W. Electric Co., Indianapolis, is planning the establishment of a construction and repair shop in the building leased at 1931 Ruckle Street.

The Mirror Plate Co., 601 North Morton Street, Bloomington, Ind., is said to have tentative plans for an addition to cost close to $50,000. It is expected to proceed with work in the fall. A. C. Spriggs is secretary.

The Showers Brothers Co., Bloomington, Ind., manufacturer of furniture, is disposing of a bond issue of $1,500,000, a portion of the proceeds to be used for expansion. An addition has recently been constructed at the local factory. W. Edward Showers is president.

The Indiana Portland Cement Co., Continental Building, Indianapolis, has plans under way for a two-story and basement building at Limedale, Ind., to cost $65,000. A portion of the structure will be equipped as a laboratory. McGuire & Shook, Indiana Pythian Building, are architects.

W. E. Vasbinder has incorporated a company to manufacture bus bodies on an extensive scale. It has mills at Chesterfield and Daleville, Ind.

Gulf States

BIRMINGHAM, May 18.

BIDS are being asked by the City Council, Okeechobee, Fla., until June 1 for equipment for a proposed municipal waterworks, including two 1000 gal. per min. intake pumps with motor or other drive; one 750 gal. per min. and one 350 gal. per min. service pumps with motor or other drive, all complete with starting and control equipment; one elevated steel water tank on tower, 250,000 gal. capacity; hydraulic lift gates, valves, meters, etc. F. E. Lawrence is engineer. R. P. Fletcher is city clerk.

The Atlantic & Gulf Fertilizer Co., Jacksonville, Fla., recently incorporated, will erect a new plant, 100 x 310 ft., estimated to cost $60,000, of which close to $25,000 will be used for equipment purchases. C. Nash Reid is president.

A new company is being formed at Temple, Tex., headed by Col. P. L. Downs and C. J. Mitchell, both of Temple, to construct a cold storage and refrigerating plant, to cost $60,000. A site has been secured.

Ovens, power equipment, conveying and other machinery will be installed in the new plant at Fort Worth, Tex., to be erected by the Campbell Baking Co., Kansas City, Mo., estimated to cost $200,000.

Fire, May 9, destroyed a portion of the planing department and other buildings at the plant of the J. Ray Arnold Lumber Co., Groveland, Fla., with loss reported in excess of $500,000 including equipment. It is planned to rebuild.

The Atlantic Coast Line Railroad Co., Wilmington, N. C., has awarded a general contract to Hugger Brothers, Montgomery, Ala., for its proposed car and locomotive shops at Tampa, Fla. J. E. Willoughby is chief engineer.

The Houston Pipe Line Co., Houston, Tex., has awarded a contract to Edwin A. MacPherson, Fort Worth, Tex., for a natural gas pipe line from Live Oak County to Edna, Tex., and from the last noted place to Gulf, Tex., 150 miles, to cost $3,500,000 with equipment. C. B. McKinney is general manager.

W. M. Smith & Co., First Avenue, Birmingham, machinery dealers, have inquiries out for a traveling crane, about 15 to 20 tons capacity; also a magnet, mushroom type, for handling scrap iron, and for one hydraulic baling press, for handling scrap tin.

The Royal Palm Ice & Refrigerating Co., Miami Beach, Fla., will soon begin the erection of two new ice-manufacturing and refrigerating plants at Miami Beach and Hialeah, Fla. The last noted is estimated to cost $200,000, and the other plant $175,000 including equipment.

The Perry Motor Co., 615 Good Street, East, Dallas, Tex., plans the erection of a two-story automobile service, repair and garage building, 128 x 143 ft., to cost $75,000.

Fire, May 6, destroyed a portion of the plant of the Coe Belting & Supply Co., 205-7 South Peters Street, New Orleans, La., mill supplies, etc., with loss reported at $75,000 including equipment. It is planned to rebuild.

The Econfina Power Co., Panama City, Fla., recently organized with a capital of $500,000, is said to be considering plans for a hydroelectric power house on Econfina Creek, to cost $400,000 with equipment. W. P. Sherman is president and L. M. Glasgow, secretary.

Fire, May 10, destroyed a portion of the oil storage and distributing plant of the Petroleum Import & Export Co., St. Rose, La., with loss reported at $100,000 including equipment. It is planned to rebuild.

The Common Council, Grand Prairie, Tex., plans the installation of pumping machinery in connection with proposed extensions in the municipal waterworks. Kock & Fowler, Central Bank Building, Dallas, Tex., are engineers.

The M. & H. Valve & Fittings Co., Anniston, Ala., has been incorporated with $175,000 capital stock, later to be increased to $225,000, and contemplates the construction of a plant to produce valves, fittings and general foundry products. J. W. Conway, Atlanta, Ga., is president.

J. W. Cain & Co., Second National Bank Building, Houston, Tex., are contemplating the erection of a steel foundry, either electric or open-hearth, and desire to get in touch with manufacturers of new equipment, also sources from which used equipment can be obtained.

Pacific Coast

SAN FRANCISCO, May 13.

THE Fageol Motor Co., 107th Avenue, Oakland, Cal., has awarded a general contract to E. T. Leiter & Son, 3601 West Street, for an addition to its plant. W. J. Wilkinson, 220 Howard Street, Piedmont, Cal., is architect.

The Union Ice Co., 354 Pine Street, San Francisco, has plans under way for a new ice-manufacturing and cold storage plant at Watsonville, Cal., to cost $350,000 with machinery. The Davis-Heller-Pearce Co., Delta Building, Stockton, Cal., is architect and engineer.

The George H. Tay Co., 165 Eighth Street, San Francisco, plumbing equipment and supplies, has taken bids on a general contract for a new two-story storage and distributing plant at Sacramento, Cal., to cost about $100,000 with equipment. R. A. Herold, Forum Building, Sacramento, is architect.

The Hofius Steel & Equipment Co., L. C. Smith Building, Seattle, Wash., manufacturer of locomotive equipment, etc., is completing plans for its proposed one-story works, 180 x 320 ft., to cost about $150,000 with equipment.

The Wenatchee District Cooperative Association, Dryden, Wash., will soon begin the erection of a three-story cold storage and refrigerating plant, 64 x 100 ft., to cost $70,000 with equipment, for which plans were drawn by R. C. Stockton, consulting engineer.

The Board of Education, Los Angeles, has plans for a one-story manual training shop at the Roosevelt High School and will begin erection soon.

The Southwest Hardware Co., Los Angeles, has awarded a general contract to Bavin & Burch, 173 East Jefferson Street, for a two-story factory, warehouse and distributing plant, 80 x 140 ft., to cost $75,000. Noerenberg & Johnson, Los Angeles Railway Building, are architects.

The Northwest Heating & Power Co., Everett, Wash., has plans for an addition to its steam-operated power plant, estimated to cost $50,000 with equipment. Henry Menzel is vice-president.

The Associated Oil Co., Olympia, Wash., has plans under way for a new storage and distributing plant, to cost $80,000 with equipment. The company engineering department is in charge. W. A. Reamer is district manager.

The Schilling-Evertz Co., 1822 Ellis Street, Bellingham, Wash., will begin the erection of a one-story foundry and general iron works on an adjoining site.

The San Joaquin Light & Power Corporation, Fresno, Cal., has applied for permission to issue preferred stock for $1,000,000, of which $550,000 is to be used for the construction of automatic power substations at Kingsburg and Le Grand, Cal., costing $250,000 and $300,000.

Canada

TORONTO, May 18.

SLOW but increasing demand for machine tools continues to feature this market. In addition to the steady volume of sales of one or two tools, several lists calling for a half dozen machines have recently appeared. The greater part of the current demand is from the automotive industry and for replacements in car shops. Sales of individual tools, however, cover practically every line of industrial activity, with high speed and labor-saving equipment in strong demand. Rebuilt and second-hand tools have also been moving well.

The Fruit Machinery Co., Belleville, Ont., manufacturer of machinery for evaporation plants, will shortly let contracts for an addition to double its present capacity. New tools and equipment will be required.

The Cartage Machine Co., Belleville, Ont., reports a large volume of orders on its books and to increase production and handle new business it contemplates the erection of an addition to its foundry and a new boiler house.

The Galt British Forge, Galt, Ont., which commenced operations less than a year ago and has been adding to its equipment from time to time, contemplates building an addition in the not distant future.

The Wayagamack News, Ltd., a subsidiary of the Wayagamack Pulp & Paper Co., Three Rivers, Que., has started construction on a plant to consist of ground wood mill and a two-machine paper mill.

P. F. Ryan, Reeve, Crystal Beach, Ont., is receiving bids for the following in connection with a new waterworks plant: Building, 45 x 64 ft.; heating system; pressure filters, 750,000 gal. capacity; pumps, 500 gal. and 10,000 gal. capacity; elevated tanks, 100,000 gal. capacity, 100 ft. high.

Bids are being received by the Singer Mfg. Co., Ottawa, Ont., for the erection of a factory at Thurso, Que. Mr. Elmitt, Banque Nationale Building, Ottawa, is general manager.

Plans are being prepared for the erection of a substation at Montreal, with 60,000 kw. capacity for the Montreal Light, Heat & Power Co., 83 Craig Street.

The Pneumatic Oil Burner Co., 292 Sherbourne Street, Toronto, has awarded the general contract for a plant at Jarvis and Richmond Streets to cost $30,000, to Dowling-Williams, Ltd., 167 Yonge Street.

Western Canada

The Wright Self-Locking Nut Co., Winnipeg, Man., recently incorporated with $200,000 capital stock, will build a manufacturing plant and expects to be in operation before the end of the present year. J. W. Wright is interested in the company.

The Riverside Iron Works, Calgary, Alta., has started work on the erection of a foundry in southeast Calgary to cost $20,000. The building will be of brick and steel and the equipment will include a traveling crane, electric elevator for elevating scrap to furnace, and other foundry equipment. It is also the intention of the company to build another addition later to take care of offices, machine shop, structural shop, etc.

Foreign

THE Port Administration, Montevideo, Uruguay, is asking bids until July 8, for six locomotive cranes for the port railroad. Specifications on file at the office of the Machinery Division, Bureau of Foreign and Domestic Commerce, Washington.

The Victorian Government Railroad, Melbourne, Australia, is asking bids until July 1, for one hydraulic spring buckle press, with accessories, as per specifications on file. D. H. Ross is secretary.

The State Department, Buenos Aires, Argentina, will push the construction of a new Government-owned oil refinery at La Plata, to cost in excess of $1,500,000 with machinery, and proposes to have the unit ready for service by the end of the year.

The Foreign Trade Bureau, Philadelphia, has received the following inquiries: (43540) from Antonio Magrina, Salmeron 11, Barcelona, Spain, wishing to get in contact with American manufacturers of rice machinery, leather transmission belting, electrical equipment, etc.; (43534) from Edwards Dunlop & Co., (London) Ltd., 7-9 Bream's Buildings, Chancery Lane, London, E.C.4, England, wishing to get in touch with American manufacturers of machinery for the production of small tin plates or pans for baking, also machinery for the manufacture of paper drinking cups, the proposed equipment to be used in Australia.

According to a statement from the American Consulate at Berlin, Germany, A. W. Kliefoth, consul, the Soviet-Russian Electro-Machine Building Trust, Moscow, has completed arrangements with the Electrobank, Moscow, to purchase through its foreign department, electrical equipment and supplies now in demand.

Wickwire Spencer Steel Corporation Showed Loss in 1924

Consolidated income account of the Wickwire Spencer Steel Corporation for 1924 showed a net loss of $1,110,677, after interest and depreciation. In 1923 net income was $78,809. Current assets as of Dec. 31, 1924, were $6,866,597, current liabilities $4,740,367. Net sales in 1924 declined to $17,600,012 from $22,999,198 in 1923. After absorbing the loss and allowing for charges due to prior years, the profit and loss surplus stood at $4,158,909. Accumulated undeclared dividends on the 8 per cent cumulative preferred stock on Dec. 31, 1924, amounted to 28 per cent.

Acme Steel Co. Will Use Recuperative Furnace for New Strip Mill

The Acme Steel Co. has contracted with the Chapman-Stein Furnace Co., Mt. Vernon, Ohio, for two recuperative reheating furnaces for its new Riverside strip mill at Chicago. These furnaces are to be of the continuous type and will heat slabs from 2½ in. to 4 in. thick, as wide as 21 in. and 11 ft. long. Each furnace will have a capacity of from 15 to 20 gross tons per hr. The contract includes two self-supporting brick lined steel stacks 80 ft. high, 63 in. inside diameter with connecting flues. This new mill represents the most modern construction.

The Seneca Iron & Steel Co., Buffalo, has recently contracted with the Chapman-Stein Furnace Co., to build seven recuperative annealing furnaces. The contract also covers two Chapman full mechanical gas producers with coal handling equipment, foundations and gas flues. This work is in connection with the new plant for making automobile sheets. The new furnaces are all of the box annealing type, five of them double and two single. They will be built with Chapman-Stein recuperators.

The yearly report of the Winchester Repeating Arms Co. and subsidiaries shows net sales in 1924 of $12,497,261, compared with $18,684,881 in 1923. Providing for depreciation, interest, etc., there was a net loss of $4,823,870, which compares with a profit in 1923 of $674,383.

Mack Trucks, Inc., reports first quarter earnings of $1,754,869, net after depreciation, Federal taxes, etc., against $1,430,309 in the first quarter of 1924. The volume of business for the first quarter of 1925 showed an increase of 30 per cent over last year and prospects for the second quarter are good. The balance sheet shows current assets of $35,832,117 and current liabilities of $5,294,267. Surplus at the end of 1925 stood at $36,960,179 against $18,836,567 at the end of 1924.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general headings of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price	3.24c.
Swedish charcoal iron bars, base	7.00c. to 7.25c.
Soft steel bars, base price	3.24c.
Hoops, base price	4.49c.
Bands, base price	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.34c.
Channels, angles and tees under 3 in. x ¼ in. base	3.24c.
Steel plates, ¼ in. and heavier	3.34c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.30c.
(Smoosh finish, 1 to 2½ x ¼ in. and larger)	3.65c.
Toe-calk, ½ x ⅝ in. and larger	4.20c.
Cold-rolled strip, soft and quarter hard	7.00c.
Open-hearth spring steel	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds and hex.	4.15c.
Squares and flats	4.65c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High-speed steel, 18 per cent tungsten	70c.

Sheets

Blue Annealed

	Per Lb.
No. 10	3.89c.
No. 12	3.94c.
No. 14	3.99c.
No. 16	4.09c.

Box Annealed—Black

	Soft Steel C. R. One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.15c. to 4.40c.	.....
Nos. 22 and 24	4.20c. to 4.45c.	4.95c.
No. 26	4.25c. to 4.50c.	5.00c.
No. 28*	4.35c. to 4.60c.	5.10c.
No. 30	4.55c. to 4.80c.	.....

Galvanized

	Per Lb.
No. 14	4.45c. to 4.70c.
No. 16	4.60c. to 4.85c.
Nos. 18 and 20	4.75c. to 5.00c.
Nos. 22 and 24	4.90c. to 5.15c.
No. 26	5.05c. to 5.30c.
No. 28*	5.35c. to 5.60c.
No. 30	5.85c. to 6.10c.

*No. 28 lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe

Standard Weld	Black	Galv.	*Wrought Iron*	Black	Galv.
½ in. Butt	46	29	½ in. Butt	4	+19
¾ in. Butt	51	37	¾ in. Butt	11	+ 9
1-3 in. Butt	53	39	1-1½ in. Butt	14	+ 6
2½-6 in. Lap	48	35	2-in. Lap	5	+14
7 & 8 in. Lap	44	17	3-6 in. Lap	11	+ 6
11 & 12 in. Lap	37	12	7-12 in. Lap	3	+16

Bolts and Screws

Machine bolts, cut thread, 40 and 10 per cent off list
Carriage bolts, cut thread, 30 and 10 per cent off list
Coach screws, 40 and 10 per cent off list
Wood screws, flat head iron, 72½, 25, 10 and 5 per cent off list

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright, basic	4.25c.
Annealed, soft	4.50c.
Galvanized, annealed	5.15c.
Coppered, basic	5.15c.
Tinned, soft Bessemer	6.15c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	18⅛c. to 19⅛c.
High brass wire	18⅝c. to 19⅝c.
Brass rods	15⅞c. to 16⅞c.
Brass tube, brazed	26⅛c. to 27⅛c.
Brass tube, seamless	22¾c. to 23¼c.
Copper tube, seamless	23¾c. to 24¼c.

Copper Sheets

Sheet copper, hot rolled, 20¾c. to 21¾c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin Grade "AAA" Charcoal 14x20	Bright Tin Grade "A" Charcoal 14x20	Coke—14 x 20	Prime	Seconds
		80 lb.	$6.15	$5.90
		90 lb.	6.30	6.05
		100 lb.	6.45	6.20
IC	$11.25	IC	6.65	6.40
IX	12.85	IX	7.85	7.60
IXX	14.40	IXX	9.00	8.75
IXXX	15.75	IXXX	10.35	10.10
IXXXX	17.00	IXXXX	11.35	11.10

Terne Plates

8 lb. coating, 14 x 20

100 lb.	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits, pig	57c.
Bar	60c. to 62c.

Copper

Lake ingot	16¾c.
Electrolytic	16½c.
Casting	16 c.

Spelter and Sheet Zinc

Western spelter	9c.
Sheet zinc, No. 9 base, casks	12c. open 12½c.

Lead and Solder*

American pig lead	8¾c. to 9¼c.
Bar lead	11c.
Solder, ½ and ½ guaranteed	39½c.
No. 1 solder	36½c.
Refined solder	30c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	16c. to 18c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	36c.

Old Metals

Business is quiet with practically no change in prices. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible	11.50
Copper, heavy wire	11.00
Copper, light bottoms	9.25
Brass, heavy	6.75
Brass, light	5.50
Heavy machine composition	8.25
No. 1 yellow brass turnings	8.00
No. 1 red brass or composition turnings	8.00
Lead, heavy	6.75
Lead, tea	5.00
Zinc	4.00
Cast aluminum	17.00
Sheet aluminum	17.00